Providing Arabic Online Health Information to the Public in Saudi Arabia: Scoping review and Qualitative Exploration of consumer preferences and content creator experience.

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Abstract

Background

Saudi Arabia, home to 33 million people, is a nation undergoing rapid transformation driven by the ambitious Saudi Vision 2030. The country's predominantly young population relies heavily on the internet as an information source for news and otherwise. However, due to the generally low English proficiency, most online activity occurs in Arabic. The quality of health information available in Arabic is often subpar. This means that information is mediated by healthcare professionals and not easily accessible to the public. Addressing the need for accurate Arabic online health information is crucial for empowering the Saudi public and supporting the healthcare transformation goals set by Vision 2030.

Aim

To propose key elements to consider when creating online Arabic health information for the public in Saudi Arabia.

Objectives

1. Identify what is known about the use of online health information (OHI) in Saudi Arabia.
2. Explore the perceptions and preferences of consumers when using the Internet for health information.
3. Explore the experience of Arabic OHI content creators and their decision-making processes when creating and providing their content.

Methods

Methods were selected to match objectives: first objective was addressed with a systematic scoping review. For the second and third objectives, qualitative interviews with consumers and content creators of Arabic OHI in Saudi Arabia were conducted, respectively.

Results

The scoping review indicated a significant demand for Arabic OHI in Saudi Arabia. Approximately a third of the population identified the Internet as a source of their health information knowledge. Younger, educated women with higher incomes, and individuals with chronic diseases were more likely to use the internet for health information. Interviews with consumers of Arabic OHI revealed a gap between consumers’ expectation and needs; and the currently available Arabic OHI content. Interviews with content creators elucidated the benefits and struggles of the decision-making processes involved in providing OHI in Arabic.

Conclusion

This thesis provides the foundation for providing OHI in Arabic for population of Saudi Arabian population. The establishment of a comprehensive and credible digital health information infrastructure is of paramount importance. By fostering collaboration among stakeholders and adhering to ethical standards, we can create a more informed and healthier society.

Impact Statement

In today's digital age, young people are increasingly living online. Despite Arabic being the fifth most spoken language globally, Arabic content online ranks only fifteenth. This discrepancy means that the Arabic-speaking population lacks access to vast amounts of internet content, particularly in health information.

Creating health information in Arabic is challenging. The primary reason is that English is the dominant language of medicine, and it is the language in which healthcare professionals are trained. This situation positions healthcare professionals as gatekeepers of health information.

Since the internet's introduction to the region decades ago, numerous initiatives have attempted to establish credible sources of health information in Arabic. However, most have failed. The few successful efforts are primarily those led by healthcare professionals on social media platforms. These professionals share information based on their professional judgment of what is appropriate.

In this thesis, I investigate what consumers seek in health information and how healthcare professionals who create content have maintained their influence. The results form the foundation for a deeper exploration of Arabic online health information content.

Understanding these dynamics will facilitate more specific research and guide the creation of trusted health information sources in Arabic. This effort will benefit the Arabic-speaking population, including immigrants and refugees in non-Arabic-speaking countries. Providing reliable Arabic online health information can serve as a model for delivering health information in other languages.

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Preface

Context and motivation

Over a decade ago, I was part of an initiative aimed at providing online health information in Arabic to the public in Saudi Arabia. Recognising the need to expand Arabic content on the internet, a group of fellow medical students in Saudi Arabia and I connected through social media. We leveraged our medical knowledge and understanding of Medical English to launch HealthyGate, a specialised blog providing health information in Arabic. After three years, we collectively decided to close the blog due to the difficulties in managing it during our medical training and the amount of experience necessary to answer readers' questions effectively (which we lacked).

Since then, I have observed many similar initiatives launch and subsequently shut down due to various challenges and limitations. One of the few entities that successfully navigated these obstacles and continued to grow are individual healthcare professionals. They have leveraged digital platforms and technology to reach a wider audience and provide reliable health information.

Research scope and objectives

This thesis explores the current available literature on the use of the internet as a source of health information. It then investigates the experiences of both consumers and content creators to propose key elements that should be considered when creating Arabic online health information for the public in Saudi Arabia.

Structure of the thesis

This thesis is organised into nine chapters, each addressing a distinct aspect of the research on Arabic online health information (OHI) in Saudi Arabia.

Chapter one will outline the knowledge in the existing literature about online health information, setting the foundation of the study. Chapter two will give an overview of the Kingdom of Saudi Arabia, explaining why it is an appropriate setting for studying Arabic online health information. Chapter three presents a scoping review of the available literature regarding the use of the internet as a source of health information. Chapter four will describe the gap in the literature, specifically providing Arabic online health information and the aim and objectives of the empirical study. Chapter five details the methodology of the empirical study and the tools employed to collect and analyse the data. Chapters six and seven will present the findings of the interviews with consumers and content creators. Finally, chapters eight and nine will discuss the findings, recommendations and conclusion.

Chapter 1. Online health information for consumers.

The narrative of online health information is intricate and varied, encompassing consumers, healthcare professionals, information, and technology. This chapter aims to delve into these various dimensions by examining the viewpoints of consumers and healthcare professionals and the significance of information and technology in this context. Additionally, it will highlight the unique aspects of the Arabic language in health information.

In this thesis, "online health information" refers to a wide array of medical and health-related resources accessible on the internet for individuals seeking information. This includes websites, forums, social media platforms, and health-related apps(1).

1.1. Who are Consumers

For the consumers' side we will examine who are the consumers, why they need health information, how do they search the internet and what competencies they need in order to get the information they are looking for.

This thesis will adopt Brennan and Safran (2005)(2) definition of "consumers" as "a rich and diverse collection of individuals with a self-defined need for health information and role in ensuring the accomplishment of their own health goals or those of others". The word "consumer" is not a uniform characteristic of all people; on the contrary, consumers differ by their own diversity. Some consumers act in their own interests, making decisions and engaging in health improvement behaviours. Others, such as parents, informal caregivers, and friends, act as agents or proxy for others, advocate for their needs, administer personal care services, and seek and interpret information for them.

The wide variety of people and usage encompassed by the term 'consumers' is why I chose the term in this thesis.

1.1.1. Importance of health information for consumers

Providing health information to consumers is crucial as it empowers individuals to make informed decisions about their well-being(2). Although information alone may not be sufficient to drive behavioural change, its significance cannot be overstated(3). Consumers depend on health information to comprehend their conditions, choose treatments, and maintain overall wellness. Access to reliable and relevant health information is vital for improving understanding of health issues, facilitating informed treatment choices, and enhancing patients' perception of control over their own health(4). Consequently, this can result in a better quality of life for individuals, particularly those managing illnesses (4).

Empowering patients with health information allows them to take more responsibility for their well-being and encourages self-management(5, 6). This is a crucial aspect of patient-centred care as it assists patients in understanding their health conditions, treatment options, and self-care practices(6). Tailored health information can also contribute to patient empowerment by making individuals more cooperative and reducing anxiety levels and ultimately improving patient outcomes(7).

1.1.2. Health information seeking behaviour

Increasingly, the internet is becoming the first place people tend to turn to when they need health information(8–10). Behaviour in relation to the use of the internet for health information has been studied in different settings and regions, mainly in English-speaking populations(11, 12).

Multiple factors can influence consumers' health information seeking behaviour, such as race, ethnicity, education, employment, gender, and socioeconomic status(13, 14). However, differences in preferences for online health information and advice between different age groups and education levels are reported to be reduced when the analysis is focused on internet users(15). Existing literature indicates that individuals reporting poorer physical and mental health were more likely to seek health information on the Internet but also used the Internet less frequently(16). Cultural and language variation in seeking online health information have been studied, revealing differences in factors affecting online health information seeking behaviour. These include demographic characteristics and perception of health(17), acculturation and language preferences(18) and nativity and linguistics factors(19).

With the increasing prevalence of online health information seeking among consumers, there is still a low prevalence of consumers sharing what they found online with their healthcare professional(20).

1.1.3. Digital health literacy

Research indicates that disparities in online health information seeking behaviours are influenced by socioeconomic status, demographics, education, and income, emphasising the existence of a digital health divide(21–23). The digital divide leads to significant disparities in access to the necessary technology for developing digital health literacy. Digital health literacy competence varies depending on the situation, but research indicates a strong connection between low digital health literacy and negative health outcomes(24, 25).

A study by Powel and Deetjen (2019) identified six types of individuals in relation to their use of the internet for health information: learners, pragmatists, sceptics, worriers, delegators, and adigitals. Learners sought to understand health better and used the internet to make informed decisions. Pragmatists used the internet to determine if seeing a doctor was necessary. Sceptics valued the internet for solving health issues that doctors may struggle with. In contrast, worriers found online health information frightening and had a critical attitude towards it. Delegators recognised the internet as a source of information but preferred not to use it themselves. Adigitals, on the other hand, did not see the internet as a useful tool for healthcare(26).

This research suggests that the digital divide in health should be understood beyond access and usage issues and should also consider the differing health behaviours resulting from various internet user orientations. These findings can inform digital inclusion policies in healthcare systems.

Consumers receive health information through active searching or passive exposure through phases of information use to achieve their desired outcomes or results(27). In order for consumers to go through these phases effectively, they must have the ability to locate, understand, and interpret health information from electronic sources. This ability is known as eHealth literacy or digital health literacy(28, 29). Digital health literacy integrates both health and digital literacy together, which can be key determinants of health(30, 31).

The rapid transition to digital healthcare due to COVID-19 social distancing requirements(32, 33) increased the risk of adverse health outcomes among groups with limited access to technology. This has added complexity to the relationship between intersectionality and digital health literacy as a concept that is distributed or outsourced. For instance, older individuals may have the financial means for technology devices and data plans but lack the necessary skills, motivation, or confidence to use them directly; as a result, they may rely on their networks—such as family members or friends—to manage their digital healthcare needs which might lead to misinterpretation and reader bias(34, 35).

1.2. Healthcare professionals’ role and views on online health information

Healthcare professionals, encompassing doctors, nurses, and allied health practitioners, are integral to delivering medical care and supporting patient health. The integration of the internet into healthcare has transformed how patients access health information and how these professionals interact with them. This section explores the perspectives of healthcare professionals on patients' use of the internet for health information and examines the evolving role of professionals as content creators.

1.2.1. How do healthcare professionals view patients’ use of the internet?

Healthcare professionals' opinions about patients using the internet for health information have been the subject of various studies, shedding light on the perspectives, challenges, and implications of this phenomenon.

A 2020 systematic review of online health information on healthcare professional-patient relationship and medical authority revealed that the majority of healthcare professionals acknowledged the significance of working together with patients, as a partnership, and for a shared decision-making process(36). However, healthcare professionals reported that they lacked the time during the consultation to work with patients effectively. Although some healthcare professionals felt that the internet was worthwhile for patients caring for their own wellbeing, others felt it undermined confidence in their professional skills. This is despite the fact that research suggests that rather than challenging the therapeutic relationship, patients tend to present information to the healthcare professional to support the relationship and to become more involved in healthcare decision-making(36).

Haase et al. (2018) also provided insights into healthcare professionals' views on patients' use of online health information and the resulting impact on the healthcare professional-patient relationship. In their work focusing on cancer, they reported that healthcare professionals were supportive of patients' needs for more information, particularly at key points in the cancer trajectory when information may be lacking. They generally agreed that cancer-related internet information could positively benefit patients and, if shared with their healthcare professionals, could benefit the patient–healthcare professional relationship. This may open new avenues of communication with patients and strengthen the patient–health professional relationship by empowering patients to be engaged in their own care(37).

1.2.2. Role of healthcare professionals as content creators

Social media platforms have become a space where individuals can act as content creators, resulting in a fundamental alteration of the communication process, from a healthcare setting to an online platform(38). There is a proposal that healthcare professionals should assume the role of information creators and assist patients in discerning what is beneficial and what is not(39). Additionally, the professionalisation of creating content on platforms such as YouTube has given rise to the institutionalisation of social media and the development of celebrities produced by such industries(40).

A 2012 analysis of social media content from the public health department of American states (yet to be replicated) indicates that public health agencies are still in the initial phase of adopting social media and their use of social media has a limited reach. Instead of taking advantage of the interactive nature of social media to facilitate discussions and connect with their audience, these agencies primarily employ it as a platform for disseminating information. To effectively utilise social media, public health agencies need to establish a strategic communication plan incorporating best practices that expand reach and promote interaction and engagement(39, 41).

Recent research conducted by Atef et al. found that Egyptian healthcare professionals content creators' self-presentation is a negotiation between two roles: part doctor, or healthcare professional, and part influencer, or social media content creator. Participants reported using YouTube to achieve a range of self and societal goals, and were rewarded for this with a diverse mix of tangible and intangible gratifications such as followers counts and personal and professional fulfilment(42, 43).

1.3. Online Health Information

1.3.1. Quality of information

The challenges surrounding online health information are related to quantity, quality, and trustworthiness. There is a lack of clear conceptual understanding of what quality means to online health consumers, leading to an array of different indicators and criteria in measuring online health information quality, resulting in inconsistencies(44, 45).

A systematic review of criteria and indicators of quality of online health information in 2019 identified 25 criteria and 165 indicators used in measuring online health information quality(44). The most commonly cited criteria employed by users were trustworthiness, expertise, and impartiality. These indicators were related to source, content, and design aspects of the information. Out of these indicators, 114 conveyed positive assessments of quality, while 35 indicated negative judgments; however, there were also 16 indicators that could have both positive and negative impacts based on contextual factors such as the source and individual differences applied in their evaluation process. The most frequently reported indicators included site owners/sponsors; consensus among multiple sources; writing style, language features; advertisements displayed; content authorship details; and interface design characteristics(44).

A further systematic review conducted in 2019, focusing on the quality of available online health information, reported suboptimal quality in online health information at the time, judging that information on the internet did not provide reliable information for consumers. None of the websites were rated as excellent in quality using DISCERN(46) criteria, with 37-79% being considered good and the rest rated poor. Only 18% were HON (health on net) Code(47) certified. Affiliation and health specialty influenced quality levels with governmental and academic sources generally received higher ratings than other media sources, while certain medical specialties (internal medicine and anaesthesiology) showed higher quality ratings(48).

In summary, although quality of online health information is important, there is no generally accepted way to measure it.

1.3.2. Online Health Information on social media

The rising trend of using social media for accessing and sharing health information presents both opportunities and challenges. While these platforms allow users to interact, seek second opinions, and engage with healthcare professionals, there is a scarcity of comprehensive research on how users evaluate the reliability of information shared through these channels in comparison to other online content, studies have shown that users prioritise reliability, quality, and accuracy when seeking health information online. Factors such as complete information, clear navigation, and the credentials of the author significantly influence user trust. Specific concerns relate to evaluating reliability on social media, which include author disclosure, information quality, anonymity, and privacy(49). Some individuals seek emotional support from fellow patients facing similar health challenges on platforms such as social media (e.g., blogs)(50). Meanwhile, resources like Wikipedia and MedlinePlus.gov cater to patients' need for medical knowledge by providing valuable insights into diseases and treatment options(51). However, Wikipedia comes with drawbacks as many individuals can edit any page and misleading information can be provided in this way.

The rapid reach of social media makes it an effective tool for disseminating public health messages by institutions(52). It can inform the public about topics such as healthy living or immunisation, communicate disease outbreak risks to a wide platform, provide prevention instructions during outbreaks, and share news updates(53, 54). Institutions can also explore strategies for generating engaging content and leverage various multimedia forms, including podcasts, audios, or YouTube videos(55, 56). Additionally, social media serves as communication platforms among stakeholders during disease outbreaks, facilitating collaboration and information sharing(57, 58).

1.3.3. Misinformation and disinformation

The rapid spread of information on social media and the internet facilitates the rapid dissemination of misinformation (errors or misunderstandings) and disinformation (deliberate manipulation)(59). While these categories have different intentions, this thesis considers them interchangeably as mis/disinformation without distinguishing between them. This decision was taken as the focus of this thesis is the effect of misleading information and how to minimise it, rather than evaluating the intention behind it.

A systematic review of the effects on patient and their relationship with healthcare professionals in 2016 highlighted the positive impact of social media use by patients on self-management, psychological well-being, and patient-professional relationships(60). However, examination of YouTube videos about prostate cancer showed a higher number of content containing potentially misinformative and/or biased content within the video or comments section(61). Another evaluation of the accuracy of articles about genitourinary malignancies shared on social media showed a higher prevalence of inaccurate or misleading information(62). Both studies had found that engagement with social media posts tends to increase when they contain misinformation or non-recommended therapies which they suggest due to ‘click bait’ titles, sensationalised or misleading headline designed to entice readers to click on a link, generated by websites to attract more visitors. Moreover, the academic nature of peer-reviewed evidence makes it difficult for lay people to understand, emphasising the importance of healthcare professionals guiding patients towards reliable online resources(61–63). Corrections, aimed at rebutting inaccuracies or misperceptions, are essential in combating misinformation, although their effectiveness may vary based on factors like polarisation or entrenched beliefs(64).

Health institutions and professionals played a crucial role in combating misinformation through social media by monitoring, fact-checking, refuting rumours during the COVID 19 pandemic(52). Professionals can utilise the insights from these studies on message design to create and share effective misinformation-correction messages on social media platforms. Despite discrepancies between perceived knowledge and actual performance in navigating online health information, efforts to enhance digital health literacy remains essential in mitigating the spread of mis/disinformation(65, 66).

1.3.4. Edutainment

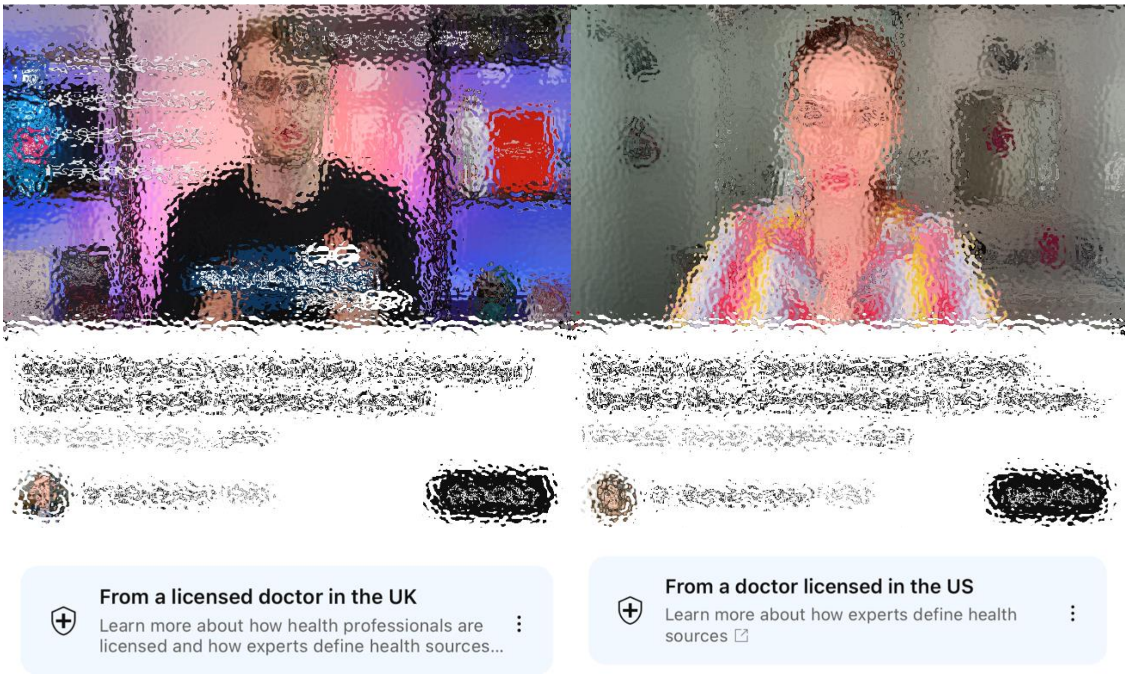
‘Edutainment’ and ‘infotainment’ have emerged as powerful tools in health communication and promotion, particularly on social media. These innovative approaches seamlessly blend entertainment with educational content, captivating audiences while conveying vital health-related messages(67, 68).

Complementing traditional public health interventions, edutainment programs offer a fresh perspective, especially effective in addressing sensitive health topics, even in challenging settings (rural areas)(69). Studies have shown their remarkable success in enhancing health knowledge, attitudes, and practices, notably in promoting positive reproductive health behaviours(70).

Moreover, the impact of edutainment on health promotion efforts is undeniable. It has been linked to significant improvements in health behaviour, attitudes, and knowledge, underscoring its potential as a versatile tool in health communication(71). Edutainment has seamlessly integrated into various health interventions, including nutrition programs, where it has effectively bolstered knowledge, attitudes, and intentions(72). This use of social media highlights the importance of leveraging it as a platform for delivering health information in Arabic, ensuring effective engagement and communication with the target audience.

1.4. Efforts by social media platforms to promote credible online health information

Some social media platforms have undertaken efforts to distinguish credible health information. YouTube has recently introduced a new tool known as YouTube Health, designed to deliver health information sourced from medical professionals such as doctors and nurses that is based on evidence and is culturally appropriate. For this, healthcare professionals must apply and provide their professional licence to participate in this initiative. Each application undergoes an extensive review process according to criteria set by reputable organisations like the National Academy of Medicine, Council of Medical Speciality Societies, and the World Health Organization to ensure credibility, dependability, and trustworthiness of the content provided. Subsequently, verified accounts feature a distinctive marker (Figure1) signifying the reliability of their shared information(73). This effort from YouTube helps in clarifying the authority of the author but not the content, which is also needed by consumers.



From a licensed doctor in the UK

Learn more about how health professionals are licensed and how experts define health sources...

From a doctor licensed in the US

Learn more about how experts define health sources

Figure 1 Distinctive marker under YouTube videos of healthcare professionals signifying the reliability

1.5. Health Information in Arabic

Arabic is the fifth most spoken language in the world and the fourth most spoken first-language in the world(74). What makes it complex is that Arabic as a mother tongue has a unique situation termed ‘diglossia’ as native speakers use two linguistic forms in their life(75). Classical Arabic is used in education, official settings, and most written materials; and the colloquial form, which is commonly for everyday use. Western academics divide classical Arabic into Classic Arabia (Quranic) (CA) and modern standard Arabic (MSA) as different languages, but most Arabic speakers do not consider CA and MSA to be different languages(76).

Despite being widely spoken and used, there is a scarcity of Arabic content on the internet, ranking as the 19th language used on the internet(77) which makes the research conducted in this PhD important.

1.5.1. Health information in Arabic

The Arabic language in the context of health faces another challenge on top of the different forms in which it is written and spoken. Medical translation into Arabic encounters terminological inconsistencies between Arabicisation, transliterated, and descriptive translation. Arabicisation occurs when an Arabic word is used to refer to the same thing in English. Transliteration is when Arabic borrows the phonetics of an English word or acronym, as in AIDS, it is known as (إيدز) which is pronounced as (eids), despite not being an acronym in Arabic. Descriptive translation uses Arabic words to describe a symptom or condition(78–80).

Additionally, in many countries where Arabic is the official language, health and medical sciences are typically taught in English or French, contributing to unresolved translation challenges(79, 81). These developed as a result of English being the leading language in Medicine(82).

1.5.2. Quality of online health information in Arabic

Section 1.3 highlighted the issue of online health information quality, mainly focusing on content in English. However, these challenges are also apparent in other languages, such as Hungarian, Romanian, and Chinese(83, 84). Additionally, it is more difficult to digitally assess certain quality evaluation criteria, such as readability in Arabic(85). Despite trials to develop a reliable formula for measuring readability in Arabic text, there is still no standard measure currently in use(85–88).

Campaigns around enriching Arabic online content in all subjects have existed with incentives (prizes and competitions) to encourage it for more than a decade(89). Despite these efforts, studies on the quality of available online health information in Arabic have been found to be of moderate to poor quality(90–92). However there remains a strong demand among the Arab population for higher quality health information(93, 94).

1.6. Conclusion

In conclusion, this introductory chapter has explored the multifaceted landscape of online health information, addressing consumers, healthcare professionals, information quality, technology, and the unique challenges faced in the Arabic context.

Access to reliable health information empowers individuals to make informed decisions about their well-being, but this necessitates digital health literacy skills. Healthcare professionals play a crucial role in supporting patients' use of online resources, while also navigating challenges in content creation and patient engagement on social media platforms.

The quality of online health information remains a significant concern, with inconsistencies in assessment criteria across languages, including Arabic. While efforts to improve Arabic health content are underway, challenges persist, highlighting the need for continued investment in digital health literacy and content quality.

Collaborative efforts are essential to address these challenges, involving healthcare professionals, policymakers, technology companies, and content creators. Prioritising digital health literacy, promoting evidence-based information, and enriching Arabic health content can contribute to a more reliable online health information ecosystem, empowering individuals to make informed decisions about their health.

Chapter 2. Introduction to Saudi Arabia

Following the exploration of the importance of online health information for consumers and the issues of Arabic as a language for such content, this chapter will introduce the kingdom of Saudi Arabia, its population, their internet usage, and the healthcare system in Saudi Arabia.

2.1. Why Saudi Arabia

Saudi Arabia's multifaceted importance in the Arab world extends beyond its borders, shaping regional dynamics and playing a vital role in various spheres. Its economic influence, strategic location, religious significance, geopolitical role, and ongoing reforms make it a key player in regional and global affairs.

Saudi Arabia's strategic location at the crossroads of Asia, Africa, and Europe enhances its importance in international relations. The Kingdom of Saudi Arabia (KSA) is the largest country on the Arabian Peninsula, occupying about four-fifths of the peninsula(95).

Moreover, Saudi Arabia's religious significance is notable, as it is home to Islam's two holiest cities, Mecca and Medina, attracting millions of pilgrims annually for the Hajj pilgrimage(96). This religious centrality gives Saudi Arabia a unique position in the Muslim world as well as the Arab world and influences its cultural and social dynamics.

Economically, Saudi Arabia contributes 25% of the total GDP (Gross Domestic Product) of Arab countries and is a major player in global trade(97). The country's influence extends to the digital realm, with the largest and fastest-growing information and communication technology market in the Arab region, although e-commerce activities have not progressed at the same pace(98). Furthermore, Saudi Arabia plays a crucial role in the cultural sphere, particularly in modern Arabic literature, where its productions are abundant and of high quality(99).

Saudi Arabia plays a crucial role in the energy market due to its vast oil reserves and significant oil exports, which make the country a major player in the international energy market(96). This economic influence extends to the global economy, as any developments in the Saudi oil sector can have widespread effects(100).

In recent years, Saudi Arabia has been undergoing substantial social and economic reforms under Vision 2030, aimed at diversifying its economy, improving governance, and enhancing various sectors such as healthcare and education(101).

2.2. Population

2.2.1. Demographics

KSA is home to around 33 million people, with around 60% being Saudi nationals. The kingdom has a very young population with around 90% under the age of 55 years and a mean age of 29(102). About two thirds of the overall population are male. But among Saudi nationals, males constitute half the population. Over the last three decades, life expectancy has increased from 69 to 77(103). The Saudi Vision 2030 aims to raise life expectancy to 80 years, representing a higher yearly gain of 0.43 years compared to the average of 0.31 years during this period(104). Achieving this target is feasible if the country addresses fundamental factors affecting life expectancy, including the 'cardiovascular revolution' (consisting of smoking prevalence, obesity, lifestyle and related policies) and the issue of road traffic accidents, which had the worst fatality rate among high-income countries in 2016 at the time the Vision 2030 was announced(105, 106). In the most current WHO report (2019), the leading causes of death are non-communicable diseases followed by injuries(107). There are around 2 million people living with diabetes and around the same number with hypertension(108), making health promotion and awareness crucial to increase the life expectancy and achieve one of the 2030 vision goals.

2.2.2. Languages of Saudi Arabia

The official language of the country is Arabic. Between 1992 and 2020, the Arabic literacy rate was 98%(109). English was first introduced in schools as a second language in 1927 for grade 7 students (age 12 years) which changed in 2023 to first grade students (age 6 years)(110). For higher education, the official language of teaching is Arabic(111). However, healthcare-related subjects and some science subjects are taught in English(112).

According to the last English Proficiency (EF) Index, Saudi Arabia ranks extremely low, at 108 out of 113 countries(113). This is similar to other populations proficiency level in their second language. For example, In the EU, more than 60% of the population know one or more foreign languages. However, only around 20% of them describe themselves as proficient in their best-known foreign language(114).

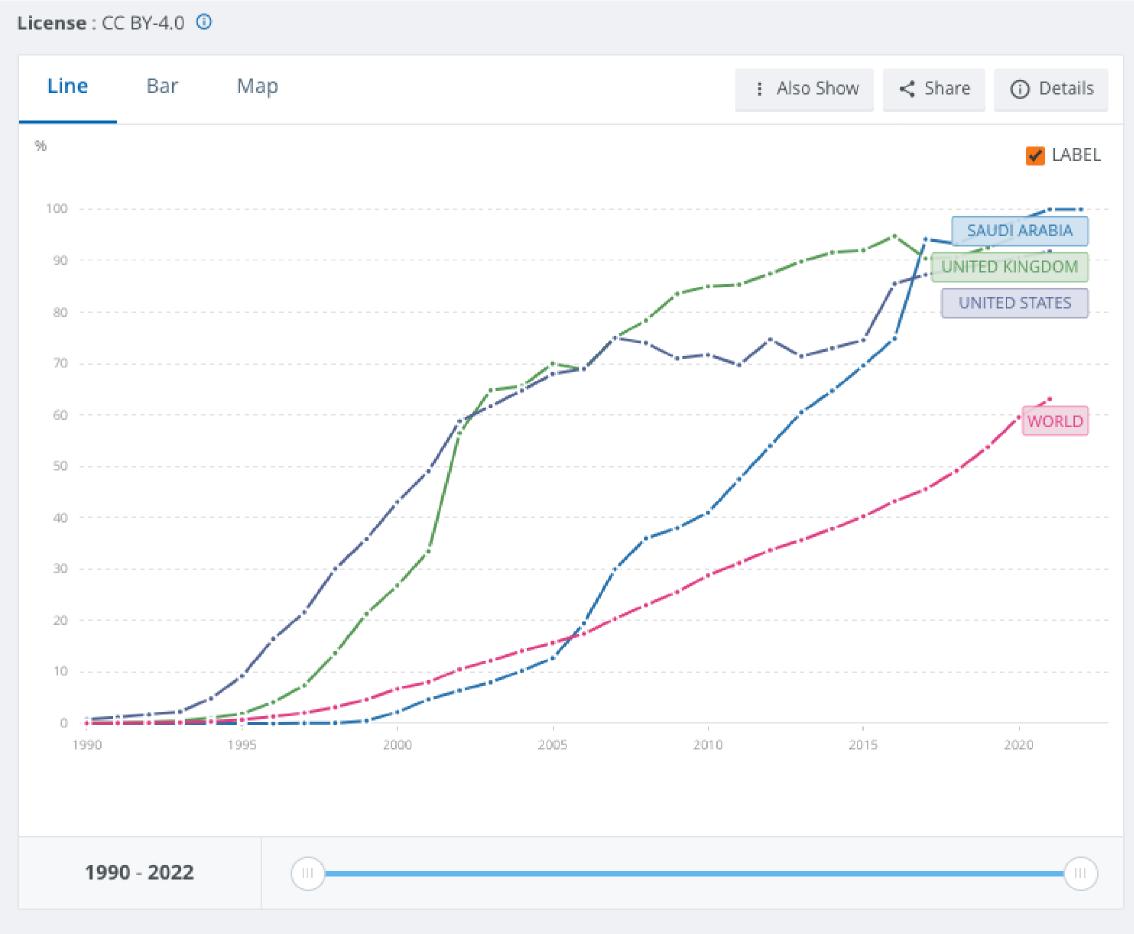


Figure 2 Individuals using the internet (% of population) - Saudi Arabia, UK, USA and World(115)

2.2.3. Internet use in Saudi Arabia

Although the introduction of the internet in Saudi Arabia in 2001 was almost a decade later than the United States (USA) and United Kingdom (UK), internet usage in KSA has grown substantially, surpassing both countries by 2017.This increase is demonstrated in (Figure 2)(115). By 2021, internet usage in Saudi Arabia reached 93% of the population(116). Most consumers (99.57%) use their phones to access the Internet, with 33% using laptops, and only 10% using PCs(117). Arabic is the language used by 88% of Internet users in Saudi Arabia(117). Of the 7% who are not using the internet, 36% reported low interest and around 40% stated a lack of knowledge on how to use the internet, despite the desire to use it(118). To note, across all internet usage, Google is currently the most used search engine(119).

2.2.4. Use of social media in Saudi Arabia

When the internet started, as the early ‘World Wide Web’, it was a unidirectional framework with information going in one direction. In 2004, the term Web 2.0 was introduced to describe a more interactive version, with user-generated content. In 2014, a closer examination of social media definitions led a group of researchers to a suggested definition of social media “a set of mobile and web-based platforms built on Web 2.0 technologies, and allowing users at the micro-, meso- and macro- levels to share and geo-tag user-generated content (images, text, audio, video and games), to collaborate, and to build networks and communities, with the possibility of reaching and involving large audiences.”(120).

The internet was introduced in Saudi Arabia during the rise of social media platforms. As discussed in the previous section (section 2.2.3), most people accessed social media via mobile phones. In 2023, the most used social media platforms in Saudi Arabia were as follows: WhatsApp, YouTube, Instagram, Snapchat, Twitter, and TikTok(121).

In 2013, only 4.1% of Twitter (known as X since July 2023) users were from Saudi Arabia but they ranked first in penetration per country(122). The penetration is defined as the number of monthly active tweeting users relative to the total amount of internet users in that country. In 2016, Saudi Arabia was among the highest in the world in YouTube watch time per user(123).

As of April 2024, Saudi Arabia ranked second after UAE (United Arab Emirates) in global use of social media platforms(124). YouTube penetration rate in Saudi Arabia is the fourth globally at 89.7%(125), where watch time per user is now similar to the global average of 28 hours per month(126).

2.3. Healthcare system in Saudi Arabia

Healthcare in Saudi Arabia is provided mainly by the Ministry of Health (MOH) through a network of hospitals and primary care centres. Other governmental institutions (military and education) also provide healthcare services in conjunction with the private sector. National health coverage is provided mainly free for citizens and residents who work in government sectors. Additionally, health insurance plans were introduced in 1999 and were provided for all private sector employees and their dependents(127).

Healthcare professionals in Saudi Arabia who work for the Ministry of Health, or any other governmental institutions, were banned from working privately beside their full-time jobs until 2022. In 2022, MOH launched their ‘health expert’ guide in which it became permissible for some MOH doctors to work in the private sector along with their governmental job(128). The Saudi Commission for health specialities regulates healthcare professionals and prohibits individual professionals to advertise their services. However, there are no specific regulations related to social media presence stated in the executive regulation for health profession(129).

2.3.1. Internet use for health services

The use of the internet for health services increased from 9% in 2020 to nearly 40% in 2022 after the introduction of the Sehati App. This app allows users to book GP appointments and receive prescriptions. The Sehati app has been a significant development in the country's healthcare landscape. The app is part of a broader initiative by the Saudi Ministry of Health to enhance public health functions and provide healthcare services through digital platforms(130). Its emergence during the COVID-19 pandemic enhanced public interaction within the healthcare system(131).

2.3.2. Population health and digital health literacy

Saudi Arabia’s population use of the internet as a source of health information will be detailed in Chapter 3. As consumers of health information, they are similar to other populations discussed in Chapter 1.

A study of information-seeking behaviours of non-working Saudi women found that health and nutrition is the most common topic they search for or seek, where internet is the most common channel they use to search for information(132).

A study on health literacy demonstrated roughly half of the participants were aware of the term health literacy, with about half exhibiting intermediary levels of health literacy and only a small percentage at basic or below basic levels. A higher proportion of female respondents showed proficient and intermediate levels of health literacy in comparison to male respondents. Among the participants, those who finished college or high school demonstrated higher levels of basic health literacy compared to other groups(133). Young women in Saudi Arabia self-assessment of their eHealth literacy showed a tendency to perceive their ability to find health information online quite highly. However, they are less confident in terms of how to use the information or evaluating the quality of the information(134).

2.4. Saudi Arabia's Vision 2030

In 2016, Saudi Arabia launched the Saudi Vision 2030. The first of the three primary objectives of the vision is a 'vibrant society'(135). To achieve this objective, the level one of the strategic objectives is to 'offer a fulfilling and healthy life'(135).

As mentioned previously in this chapter, the vision aimed at diversifying the economy, improving governance, and enhancing various sectors such as healthcare and education. The effect of the changes in healthcare is evidenced by initiatives like the Sehati App. However, there is still a lack of high-quality Arabic online health information for consumers on digital platforms.

2.5. Conclusion

This chapter highlighted the suitability of Saudi Arabia for studying consumer experiences and needs regarding Arabic online health information. The country's geographical, religious, and economic significance, combined with its readiness for change, make it an ideal location for this study. Despite high Arabic literacy rates among the population, English literacy remains low, which, when coupled with extensive internet usage, underscores the need for high-quality health information in Arabic. The following chapter will review the existing literature on the use of the internet for health information in Saudi Arabia.

Chapter 3. The use of online health information in Saudi Arabia: a scoping review

3.1. Introduction

Chapter one emphasised the vital role of consumer health information in empowering individuals to make informed decisions about their well-being to improve their health. It also highlighted the internet's facilitation of access to information, while acknowledging the challenges in assessing its credibility and trustworthiness. Disparities in health information seeking behaviour among different consumer groups are evident despite global internet accessibility. Additionally, Chapter one addressed the difficulties associated with providing online health information in Arabic, including translation issues, readability concerns, and variations in language presentation.

Chapter two provided an overview of the Kingdom of Saudi Arabia and its influence on literature, science, as well as its unique demographic features such as a young population highly engaged with internet and social media. The chapter also pointed out opportunities for change driven by Saudi Vision 2030. This thesis could contribute to achieving strategic objectives related to 'offering a fulfilling and healthy life'.

The first step to providing recommendations as part of the Saudi Vision 2030 strategic objective of “offer a fulfilling and healthy life” is to understand the current state of online health information in Saudi Arabia. I chose a scoping review as the most suitable approach for mapping out existing knowledge landscape whilst identifying any research gaps(136, 137). A scoping review offers an initial evaluation of the potential size and scope of the existing research literature. Its goal is to determine the nature and breadth of research evidence, which often includes ongoing studies, and to provide a comprehensive overview of a potentially extensive and varied body of literature on a broad topic(136, 137).

3.2. Review aim

To explore the use of the internet as a source of health information in Saudi Arabia.

3.3. Review objectives

1. To explore the current literature on how consumers use online health information in Saudi Arabia
2. Explore the perceptions of consumers on the online health information available.

3.4. Methods

I chose a systematic scoping review to explore evidence in this emergent area of research. Scoping reviews are ideal for mapping all available literature rather than answering a specific question, allowing me to capture emerging and relevant literature to my research(138). This approach helps understand the breadth of this fast-moving field, which might be missed in a systematic review.

3.4.1. Identifying the Research Question

This review aims to answer the following questions: (i) How do Saudi Arabia's population use the internet as a source of health information? (ii) How do Saudi Arabia's population perceive the internet as a source of health information?

Concepts: Internet is used in this review as an umbrella term for all information sources that require internet connection to access, including all types of social media.

Prior to conducting the review search, the developed protocol was shared in the Open Science Framework(139) because the scoping review protocol was not eligible for registration with PROSPERO(140).

3.4.2. Identifying Relevant Studies

To identify the relevant studies for the scoping review, I developed a search strategy with the help of a research librarian around three concepts: Internet, health information and Saudi Arabia.

The search terms included: (online or internet or web or "social media" or blog* or "social networking site*" or "online social network*" or "online community*" or "online forum*" or Facebook or Twitter or Wikipedia or YouTube or Whatsapp) AND ((e-health or ehealth) adj4 (literacy)) or ((health or medical or patient or consumer) adj4 (information or promotion or literacy)) AND (saudi*).

In Arabic: (سعودي*) AND (انترنت OR “تواصل اجتماعي” OR تويتر OR فيسبوك OR يوتيوب OR مدون* OR منتدى OR منتديات) AND (معلومات OR وعي OR تثقيف) n3 (صحي OR طبي).

An example of search strategy is attached as Appendix 1.

I translated literature from Arabic and the translations were reviewed by two bilingual experts: Alaa Alghamdi (AA), a native Arabic speaker, and Tassnym Sinky, a native English speaker. Both have excellent proficiency in both languages.

Using the above-mentioned search strategy, in March 2020 I searched 11 databases to cover a wide range of sources. English databases included: MEDLINE, Embase, Scopus, Web of science, PsychINFO, CINAHL and Applied Social Sciences Index & Abstracts (ASSIA) and Global Index Medicus (IMEMR); Arabic databases: AraBase (Dar Almandumah), Almanhal and emaarefa.

In order to widen the range of searches, no restrictions in date of publication, methods or type of publication (journal article, thesis, conference paper, etc.) were added to the search. The search was restricted to English and Arabic. In addition, a search was conducted in the Saudi Digital Library for Arabic studies not included in the Arabic databases. In April 2020, I did a backword and forward citation search for included studies.

The review was not updated after April 2020 because it aimed to capture a specific point in the literature on the use of the internet for health information in Saudi Arabia. Updating it post April 2020 would disrupt the analysis and potentially invalidate the topic guides of the empirical studies in this thesis.

3.4.3. Selecting studies

Articles were imported to Zotero software for duplicate removal and transferred to RayyanQCRI(141) for scanning. Title and abstract screening for relevant studies was carried out by myself with a random 10% also screened by AA. Any disagreements were discussed until a consensus was reached. Finally, full text scanning was conducted by me.

For inclusion in this review, study participants must be adults living in Saudi Arabia (note: Adult age in KSA was 16 before 2019), and studies should focus on the use of the internet by members of the public for health information. Studies were excluded if no full text was available, they focused on internet use for any other health purposes (tracking, consultation, etc), studies about the internet as a preferred source of health information and internet use by healthcare professionals. Studies assessing the quality of tweets, posts or websites were excluded. The authors were contacted if disaggregated data were needed or if percentages were missing from diagrams or text

3.4.4. Data Extraction

During scanning, I identified two main categories of studies with some overlap between them. Therefore, two sets of data extraction sheets were developed and iterated after piloting with 10% of the included studies. Extracted data included: title, author, date of publication, aim, setting (educational, clinical, internet or public places), form of survey distribution (paper based or internet), population, summary of results. Two of the studies(142, 143) did not include detailed information in text or tables but only graphs without clear percentage labels, for this I employed the GrabIt(144) software to best estimate the percentages in the charts and graphs.

3.4.5. Summarising and reporting the results

Two main categories were identified in the studies according to their focus: first, studies evaluating consumers' knowledge about a health-related topic that asked participants about their source of information / knowledge and had the internet, websites or social media listed as a choice among other sources. Secondly, studies that included surveys focused on the use of the internet or a social media platform by the public for health information in general or in a certain subject. There was some overlap between the two categories.

For the first category, I extracted the percentage related to the use of internet, websites or social media as a source of information. To report the average percentage of population indicating the use of internet as a source of health information and give weight to each study sample size, I used metaprop command in Stata 18(145) to aggregate a pooled average proportion. Some studies had two different options for websites and social media. Therefore, I differentiated between them and created two sets of reported proportions: (a)internet or website, and (b) social media. For studies exploring more than one topic, I calculated the mean percentages within the study (based on where participants acquired information from).

For the second category, after several iterations, I used the reporting structure from a previous systematic review(146) (That detailed the use of internet as a source of health information by pregnant women). Data was charted into the themes of: (i) characteristics of people who searched the internet, (ii) frequency of use, (iii) type of information sought and (iv) perception of people who used the internet for health information.

3.4.6. Quality Assessment

I assessed the quality of included studies using the Standard Quality Assessment Criteria for Evaluating Primary Research Papers from a Variety of Fields (QualSyst)(147). This 14-item tool facilitates the assessment of methodology and potential biases across diverse study designs, including both quantitative and qualitative research. Due to the observational nature of the included studies, three criteria—item 5 (random allocation), item 6 (blinding of investigators), and item 7 (blinding of subjects)—were excluded from the evaluation process. Each item in the tool was rated on a scale of 0 (No), 1 (Partial), or 2 (Yes), with the option to mark items as not applicable (N/A). Given the exploratory nature of most included studies, many of which reported their results as percentages, I marked items 11 (variance estimates) and 12 (control of confounding) as not applicable for many studies. Therefore, the total possible score varied between 18 and 22, depending on the applicable criteria, to calculate the final percentage score for each study.

3.5. Results

A total of 84 studies were included in this scoping review (see Appendix 3 for the complete list). These studies were obtained from the 1353 research studies identified in the initial search findings (Figure 3). An additional hand search of the

Saudi Digital Library for more Arabic studies resulted in 4 more studies. After removing duplicates, 1031 studies were screened for relevancy of title and abstract and 887 studies were excluded. A total of 144 full texts were assessed against the inclusion criteria and 67 were excluded for not meeting the inclusion criteria as follows: young population (age under 16) (9 studies), not in Saudi Arabia (3 studies), internet used by healthcare professionals (6 studies), not health-related use (1 study), internet wasn't a distinct category of sources of information (39 studies), abstract only or conference proceedings (7 studies). Two studies were excluded as they focused on preferred sources where participants obtained their information from rather than the actual use of the internet for health information. After performing a backword and forward citation search, 7 studies were added.

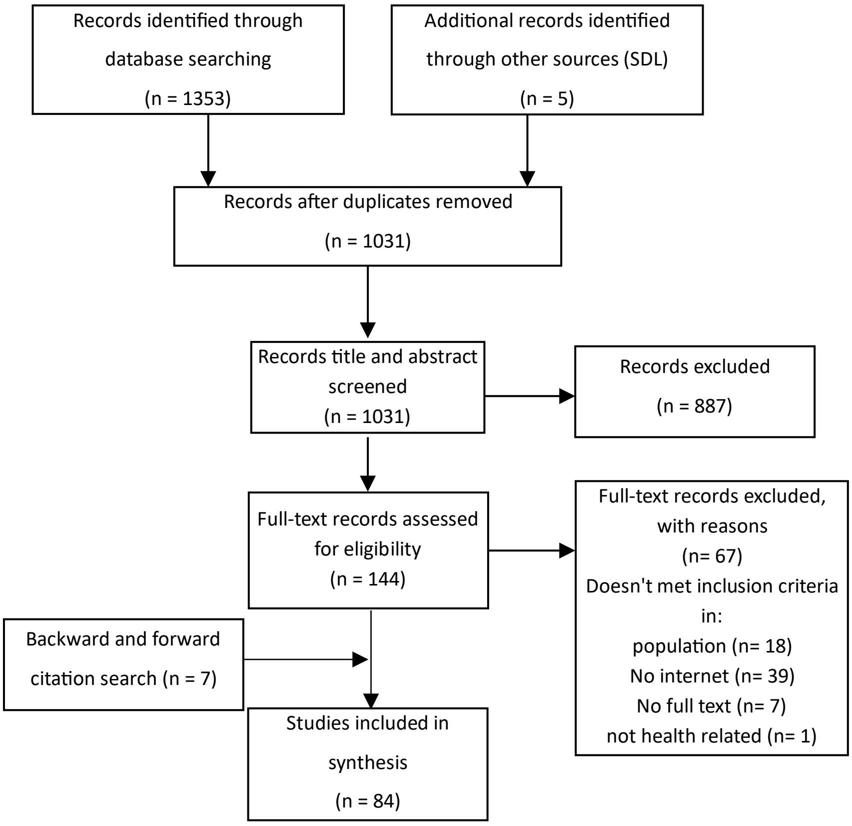


Figure 3 PRISMA chart of the inclusion process

3.5.1. Summary of the characteristics of the included studies

All 84 studies were published between 2006 to 2020. Only five of these were published in Arabic. The majority were published in scientific journals, 2 were academic theses(148, 149), one preprint(150) and one was a full conference paper(151). One study used mixed methods study(149) and the rest were quantitative. The included studies were conducted in various sites: community (shopping malls), clinical settings (hospitals and clinics), educational settings (schools or universities) and the internet. The number of participants varied between 71 to 4847 participants per study. Two main categories were identified in the studies according to its focus: 59 studies which focused on assessing participants' knowledge about a health-related subject, including their preferred sources of health information, with internet as an option. Additionally, 29 studies focused on the use of the internet by the public for health information in general or in a certain subject. There was some overlap between the two categories.

3.5.1. Quality of the included studies

The overall scores from the QualSyst checklist for the included studies ranged from 55% to 100%, with an average score of 84% ± 11% Standard deviation. Of the 84 studies reviewed, 58 (65.5%) achieved a score above 80%. Detailed scores for each study are presented in Appendix 4.

Among the checklist criteria, controlling for confounding emerged as the weakest area, closely followed by sample size adequacy. Only 47 studies (56%) fully met the criterion for having "Outcome and (if applicable) exposure measures well-defined and robust to measurement or misclassification bias, with means of assessment reported." The remaining studies received partial scores due to unclear measurement tools and poorly defined methodologies.

3.5.2. First category results

56 studies asked variations of the question of "what is the source of information or knowledge" with multiple options. Of these, 43 included the internet or website as an option(133, 142, 143, 152–191) and 19 studies included social media as an option(143, 156, 163, 166, 175, 191–204). The weighted pooled average proportion for the internet was 22% [95% CI (confidence interval): 21%, 22%]. For social media, 21% [95% CI: 20%, 22%]. The heterogeneity between the studies makes these averages reference numbers (i.e. Not formally representative of the target population). These averages indicate the percentage of people who reported acquiring their information from the internet or social media, with an overlap between the two categories.

3.5.3. Second category results

Four main themes were identified from the results of included studies: characteristics of people who searched the internet, frequency of use, type of information sought and finally the perception of people who used the internet for health information.

3.5.3.1. Characteristics of people who searched the internet

Participants more likely to use the internet for health information tended to be younger(205–208), females(148, 206, 207, 209–212), with higher education levels(150, 171, 205, 206, 208, 211, 213) and higher monthly incomes(206, 208, 211). Those with chronic diseases or illnesses for longer than 2 or 3 months were also more likely to search for health information online(206, 208). Only one study reported more male users than females(208).

The majority of participants searched the internet for themselves(211, 214). In one study, the internet was searched as a proxy for others(211). Moreover, regarding employment status, one study indicated that employed people were more likely to use the internet for online health information(208), while another study found that unemployed people are more likely to use the internet for online health information(207).

3.5.3.2. Frequency of internet search

Seven studies measured frequency of internet use for health information. They used different questions but on average most participants were using the internet for health information two times a month(148, 160, 209, 211, 213–215).

3.5.3.3. Type of information sought

The majority of participants used Arabic language as their primary language to find online health information(206, 209, 216, 217). Difficulties finding information in Arabic or limited English literacy were mentioned as a limitation to use the internet as a source of health information(148, 171, 213, 218).

The most frequently used social media platforms for health information were YouTube, WhatsApp, Snapchat and Twitter(149, 207, 209, 212, 216, 219–222). The only exception was a study where Google+ was the most used platform for information regarding autism(151). The most frequently used search engine was Google(171, 209, 216, 222, 223).

With regards to the source of health information used by participants, of included studies, personal accounts of physicians and different healthcare professionals who were usually the most used and trusted(149, 151, 206, 210, 223, 224). Governmental health institutions came second to healthcare professionals followed by private or global health institutions(149, 206, 224, 225).

Consumers reported searching the internet out of curiosity and to gain general knowledge rather than focusing on specific issues(208, 209, 224).

3.5.3.4. Perception of people who used the internet for health information

The reliability and trustworthiness of online health information found was discussed in several studies. The majority of respondents in the included studies found health information to be either unreliable or didn't know how to judge the studies reliability(148, 151, 160, 205, 207, 219, 220, 226). Although levels of trust varied between platforms and subjects, the trust in available information on all occasions (online) appeared very low (less than 10%)(150, 206, 211–214, 223).

On the other hand, levels of satisfaction and usefulness of information found online were generally positive(160, 171, 205, 206, 208, 210, 211, 214–216, 219, 223, 224). For example, caregivers of autistic children reported higher dissatisfaction with the sufficiency of online information(151).

Factors influencing the evaluation of online health information included web, health institution affiliation(211), ease of use of websites followed by recent update dates(226).

3.6. Discussion

3.6.1. Summary of findings

This scoping review of available literature about the use of online health information in Saudi Arabia confirmed that adults in Saudi Arabia are using the internet for health information. About a third (37.77%± SD 20.27) of participants reported the internet or social media as the sources of knowledge about various health topics. However, the largest study (with over 3000 participants) reported less than 5% usage, and the weighted estimate showed 20% of participants used the internet to gain their information. Participants who were young, female, with higher education, and higher monthly incomes were more likely to use the internet for health information. Arabic Language was mentioned as the main language used when searching the internet for health information, and lack of Arabic content and low English literacy as a barrier for finding information. The most used social media platforms for health information by participants were YouTube, WhatsApp, Twitter and Snapchat, indicating a preference for video formats or short, informal texts. Furthermore, healthcare professionals; personal accounts and pages were the most followed and trusted, followed by governmental health institutions. This can possibly be explained by the lack of governmental health information resources on the internet at the time of the studies. Perception of the available Arabic online health information resources were seen in general as unreliable and were not generally trusted. On the other hand, the majority of participants found them useful and satisfactory. Website design and ease of use, affiliation to health organisation and last update dates were some factors affecting the evaluation of them by participants.

3.6.2. Context of findings

The results of this scoping review suggest that, in Saudi Arabia, being younger, female, with higher education and higher monthly income was associated with a greater tendency to search for health information on the internet than their counterparts, which is consistent with findings of other research conducted in different populations(227, 228). The majority of participants used Arabic language to search for online health information which is in agreement with the findings of the General Authority of Statistics in Saudi Arabia report of 2019(117). Participants also reported the lack of available Arabic online health information content as a barrier to use the internet. The majority of participants searched the internet for general education purposes, similar to the findings of a study conducted in Europe(229).

Video based formats, particularly on platforms such as YouTube and Snapchat were the most used. This was followed by short and informal texts or videos on Twitter and WhatsApp. This could be attributed to consumers ability to identify and assess who is providing the information; or because of the ease of spoken and dialectal Arabic in comparison to formal written Arabic(75). Additionally, it can be due to a shortened attention span in recent years(230).

Health care professionals' personal websites and social media accounts are the most used and trusted professionals of online health information followed by governmental institutions. This differs from other reviews where governmental sources were most used and trusted(231, 232). This can be explained by the lack of available general content from governmental institutions online at the time when reviewed studies were conducted. MOH now have a growing content on their website. Trust in healthcare professional accounts aligns with a previous study which found that educational content of YouTube videos produced by physicians to be of significantly higher quality compared with those created by non-physicians, patient testimonials, and commercials(233).

Consumers have contrasting perceptions about available sources of online health information in Arabic. While the majority find the information useful, they also view its reliability and trustworthiness negatively. This paradox is supported by recent studies that have identified a counter-intuitive relationship between information source, trust and protective behaviours(234–236).

3.6.3. Challenges in using Arabic databases

The review involved three Arabic databases which demonstrated challenges, including the lack of keyword search ability (using title, abstract, and/or keywords). Ultimately, this resulted in full texts which included more studies than needed. Moreover, two of the databases exported results in an unstandardised format, which required me to manually add search results.

During data extraction, I found two very similar studies which were identical except for the authors, city, and journal, indicating possible research misconduct. After reviewing the literature(237, 238) about handing such issues and discussing the issue with my supervisors, I decided to create an anonymous email and contact both publishers about what I found. I decided to exclude both studies from the scoping review. This experience highlighted my concerns about the quality of available literature from Saudi Arabia.

3.6.4. Strengths and limitations

At the time of the review, I had not identified any other study that attempted to identify the use of the internet as a source for health information in Saudi Arbia.

This review has some limitations mainly in two major aspects, namely, Arabic databases' search and quality of included studies. I found the use of Boolean commands (such as AND and OR) in Arabic databases challenging, there were inconsistencies of result numbers using the same search strategy. Some missed studies might be the result of this.

While critically evaluating the individual studies and the journals that published them, many exhibited quality concerns, as evidenced by the absence of peer review indicators, missing graph labels, and inconsistent reporting. Despite an average QualSyst score of 84% ± 11%, with 65.5% of the 84 studies scoring above 80%, weaknesses were particularly evident in controlling for confounding and sample size adequacy. Furthermore, only 56% of the studies fully met the criterion for having well-defined and robust outcome or exposure measures, with unclear methodologies and poorly defined measurement tools being common issues. Nevertheless, the similarities across findings underscore the likely importance and relevance of the results, despite these limitations.

Although the quality assessment tool showed a relatively high average score, the use of the tools is inherently limited to assessing the quality of reporting. Given my experience of finding potential research fraud while conducting the review, with the less-established journals, and publication dates suggesting a lack of peer review, I remain cautious about the overall quality of available literature.

The high number of COVID-19 related publications and the rapidly evolving nature of digital health leads to a substantial volume of new publications and thus new results. This review was conducted to capture a point in time in the literature and provide the basis for the subsequent studies in the thesis. I, therefore, took the decision not to update the review after completing the subsequent studies which were based on gaps in knowledge identified in the review originally conducted.

3.6.5. Recommendations

3.6.5.1. For policy makers

There is an appetite for more reliable and trustworthy online health information content in Arabic, particularly from the governmental sector. Saudi MOH trajectory of enhancing their electronic services with mobile apps for tele-consultation and appointment bookings (Sehati) are appreciated, however, there is a need for more comprehensive health information content.

3.6.5.2. For future research

Further in-depth exploration of factors that affect consumers' trust and perception of reliability is crucial. This will provide better insights into the most effective ways to provide Arabic online health information content. The significant effort by non-governmental healthcare professionals in providing online health information across various platforms is an area worth exploring further. Critically examining their experiences and the challenges they face in delivering online health information can provide crucial insights, in turn enriching recommendations for policy makers on improving the quality of Arabic online health information content.

This review included 84 studies but there were no qualitative studies in this field. Qualitative exploration of the topic will further enrich the literature with in-depth understanding for the need of consumers of Arabic online health information in Saudi Arabia.

3.6.6. Conclusion

Consumers in Saudi Arabia are using the internet to access health information mainly in Arabic. The available Arabic online health information content was reported to have mediocre trust and reliability levels. The relative lack of Arabic online health information content was reported to be a limitation. Young females with higher education and a higher monthly income were found to use the internet to access health information more than other demographic groups. Moreover, videos and short texts were the most used online formats. Content from health care professionals' personal accounts was reported to be used more than governmental sources. Further research is required to explore how to optimise Arabic online health information content to consumers in Saudi Arabia.

Chapter 4. Study rationale

4.1. Introduction

Chapter one emphasised the significance of consumer health information in empowering individuals to make well-informed decisions about their health and enhancing health outcomes. It also examined the internet's role in facilitating access to information, while recognising the challenges associated with assessing its reliability. Additionally, the review highlighted the lack of studies on the experiences of healthcare professional content creators. Furthermore, it discussed the obstacles related to providing online health information in Arabic, including translation difficulties and variations in language usage.

Chapter two presented an outline of the KSA and its impact on literature, science, as well as distinctive demographic characteristics including a youthful population highly involved with the internet and social media. The chapter also highlighted prospects for change driven by Saudi Vision 2030. This thesis aims to directly contribute toward accomplishing the strategic objectives 'promoting a fulfilling and healthy life'. As mentioned in Chapter one that the availability of credible and accessible health information online helps empower patients and lead to overall better health outcomes.

Chapter three identified eighty-four studies related to the public using the internet for health information in Saudi Arabia. The studies identified were quantitative, with one employing a mixed method approach and no qualitative research. the study revealed that adults in the country rely on the internet for health information. Specifically, young, educated, and higher-income individuals, particularly females, were more likely to use the internet for health information. Arabic was reported as the primary language used for searches, where a lack of Arabic content and low English literacy posed challenges. Personal accounts, healthcare professional pages, and websites were the preferred sources of information, followed by governmental health institutions. Overall, available Arabic online health information resources were perceived as somewhat unreliable but useful overall.

The scoping review uncovered a significant gap in qualitative investigation of consumer preferences and experiences in Saudi Arabia. It highlighted that individual content creators' social media profiles are more trusted than other types of social media profiles. Therefore, given the lack of existing studies on this topic, understanding the experiences of content creators is crucial. It is essential to critically delve into their journey and gain insights from them on delivering online health information to consumers in Saudi Arabia.

This thesis now turns its focus on the experience of consumers and content creators of Arabic online health information using qualitative methodology. Here, the aim is to capture the views of consumers and content creators to understand the best practices in providing Arabic online health information.

4.2. Study aim and objectives

4.2.1. Aim

To propose elements to be considered when creating Arabic online health information for the public in Saudi Arabia.

4.2.2. Objectives

1. Explore the use, perceived relevance, and trustworthiness of Arabic online health information from the prospective of consumers.
2. Investigate consumer preferences for finding, trusting and using Arabic online health information.
3. Examine current Arabic online health information content creators' motivations, views and decision-making processes in creating Arabic online health information content.

Chapter 5. Empirical Work Methodology

5.1. Introduction

Chapter four highlighted the need of an explanatory study on consumers preference and use of Arabic online health information as well as the importance of the insights that healthcare professional content creators can provide with regards to online health information for consumers.

In this chapter, I will begin with a brief description justifying the use of qualitative methods. Following this, I describe the research design and tools, sample, topic guides, data collection, ethical considerations, data analysis, main themes, and finally my reflection on the interviews.

5.2. Study design

Based on the literature review and scoping review, consumer health information is important in empowering individuals to make informed decisions about their health. There is a lack of studies focusing on the experiences of healthcare professionals as content creators. Additionally, there are obstacles in providing online health information in Arabic, including translation difficulties and variations in language usage. The KSA has a large impact on literature and science. Its young, internet-savvy population are highly literate in Arabic but poorly literate in English and ready for change driven by Saudi Vision 2030. The scoping review revealed a lack of qualitative research on consumer preferences and experiences in Saudi Arabia. Since individual content creators' social media profiles are considered more reliable than other social media profiles, it is important to understand their experiences as there is a lack of studies on this subject. Therefore, it is crucial to explore their experiences and gain valuable insights for providing online health information to consumers in Saudi Arabia.

In this study, I used a qualitative explorative approach to gather in depth knowledge about a topic that has been relatively under investigated. It is important to understand how consumers use the Internet in general and for health information in particular, what they are looking for and why, what shapes the content creators' experience in providing health information in Arabic in addition to their decision-making processes. Given Saudi Vision 2030's push for digital health literacy, this study employed a qualitative, explorative approach to gain in-depth insights, involving a significant amount of reflexivity and personal experiences(239).

The thematic analysis in this study is rooted in a social constructivist philosophical framework, which informs both its ontological and epistemological foundations. This framework emphasizes understanding participants within the specific cultural and historical contexts in which they live and work. Researchers acknowledge that their own backgrounds influence their interpretations, positioning themselves within the research to recognize how personal, cultural, and historical experiences shape their perspectives. The goal is to interpret and make sense of the meanings participants ascribe to the world. Ontologically, this approach assumes that reality is multifaceted and socially constructed, viewing the identified themes as subjective interpretations emerging from participants' lived experiences, recognizing that digital interactions also shape reality. Epistemologically, it reflects a constructivist stance, where knowledge is collaboratively constructed through the interaction between the researcher and the data. This approach aligns with interpretivism to uncover the motivations behind content creators' behaviours. Reflexive thematic analysis allowed for flexibility in identifying complex, implicit meanings, offering a nuanced understanding of how language, culture, and technology intersect in the creation of online health information.

By integrating these philosophical principles, the analysis aims to provide a nuanced and in-depth understanding of the experiences of both consumers and content creators. This approach allowed the study to highlight the interdependence between individual experiences and the cultural, and institutional factors shaping the landscape of Arabic online health information. By doing so, the analysis provided a rich, contextually informed understanding to address gaps in Arabic online health information and enhancing its quality and accessibility.

5.3. Design and Tools utilised

5.3.1. Online Semi-structured Interviews

As a Saudi woman, I'm familiar with the traditional gender segregation norms that have shaped our society. Additionally, Saudi Arabia is a large country, and travelling between its regions can be difficult for solo females. Given these cultural and geographical reasons, and the fact that I was residing in the UK, I proactively planned the interviews to be online. Using online interviews for cultural and geographical reasons is appropriate(240).

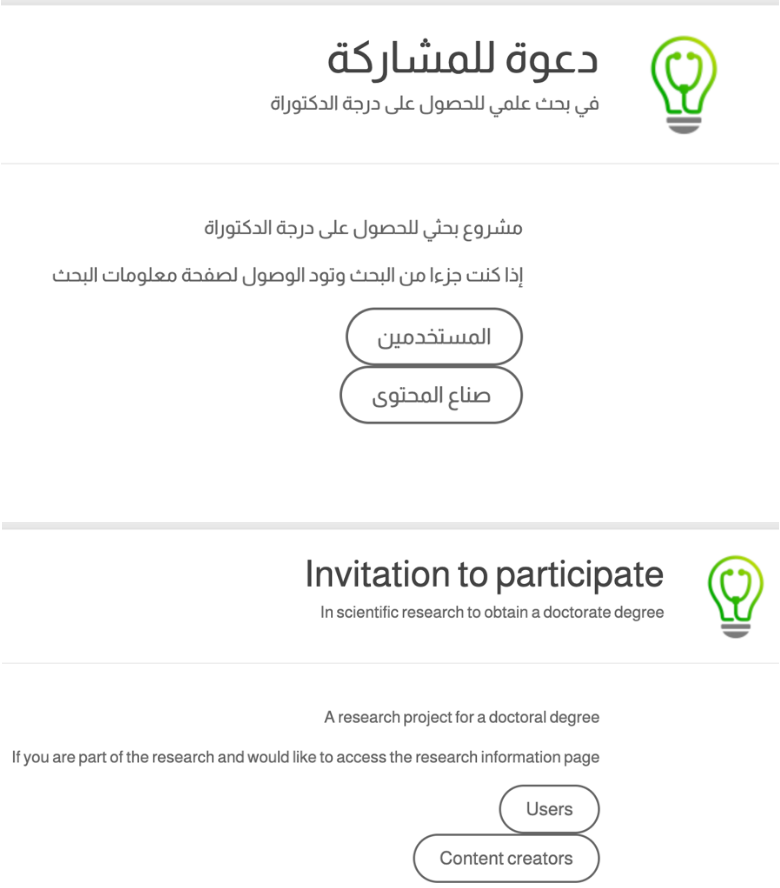
Research has shown that the quality of the responses from online interviews is similar to those acquired through traditional in person methods of interview in responses, reactions and repetitions(241). However, the use of online interviews can result in issues with representativeness, excluding potential participants who lack good internet connection, software, and/or technological competence (242, 243). Despite these concerns, a good internet connection is available in Saudi Arabia in most homes and workplaces; and the target population was those who used the internet for health information. Additionally, the COVID-19 pandemic has increased familiarity with online platforms for meetings and schooling(244). I chose Microsoft Teams which is a collaboration platform that integrates chat, video meetings, file storage, and application integration to enhance team productivity and communication to conduct the interview. This choice met requirements of the General Data Protection Regulation (2016/679) and the Data Protection Act (2018) for data storage on servers in the UK.

To conduct this research, I chose semi-structured interviewing method which is known to produce rich data(245). The flexibility of semi-structured interview allows participants to express their viewpoints in more details(246).

Semi-structured interviews were conducted in Arabic using Microsoft Teams, either via video or audio, according to the participants' preferences. This method ensured that the data collected was both reliable and culturally sensitive while also being logistically feasible.

5.3.2. Website

To make recruitment easier for potential participants, I designed a one-page website to act as a participant information sheet. The website (https://saaef.com) displayed the relevant information sheet for each group during their respective recruitment phase. Initially, it showed information for consumers, and later, it was updated to show information for content creators during their recruitment period. After the recruitment period for both groups (consumers and content creators) was completed, the site was updated with a landing page that displayed a simple message 'if you were part of the research and would like to review the information sheet, you can press here' followed by two icons, one for each group (Figure 4).



دعوة للمشاركة

في بحث علمي للحصول على درجة الدكتوراة

مشروع بحثي للحصول على درجة الدكتوراة

إذا كنت جزءا من البحث وتود الوصول لصفحة معلومات البحث

المستخدمين

صناع المحتوى

Invitation to participate

In scientific research to obtain a doctorate degree

A research project for a doctoral degree

If you are part of the research and would like to access the research information page

Users

Content creators

Figure 4 the new landing page of the research website. Original (above) and auto translated (below)

Both original pages were displaying participant information sheet in a user-friendly way. The page targeting consumers had an introductory video in Arabic where I answered some questions about why they might want to participate in the study and outlined what was expected of them. Additionally, it had a ‘Start’ button that directed potential participants to an MS Forms form to confirm eligibility and tick their consent to each section of the consent form. Provided they agreed to all consent form requirements, they could proceed to an option to book a suitable time slot for the interview (using MS Bookings) which then sent them a link to join the meeting or contact me through a WhatsApp link (specific phone number for the project). If they chose not to use the booking system or contact me via WhatsApp, or if they had questions, they had the option to contact me using a 'contact me' form. I would then contact them to arrange the interview time and consent. The ‘contact me’ section had the option of sending me questions or booking a 20-minute team meeting. Figure 5 shows participants journey from the project website to the interview. (Appendix 13 shows screenshots of the website in Arabic and an auto-translated version).

Figure 5 participants journey from the project website to the interview

5.4. Sample

5.4.1. Consumers:

Consumers were defined as adults who live in Saudi Arabia and reported searching, viewing or receiving any type or source of Arabic online health information, including social media platforms and WhatsApp.

5.4.1.1. Sample

To understand consumers’ views on how creators could provide high-quality Arabic online health information to the general population, I included adults living in Saudi Arabia who reported viewing any kind of Arabic online health information content. After the first 10 interviews, I purposively selected participants to reflect diversity across gender, age group (10-year bands), provinces, and education level (less than college, college level, and post-graduate).

5.4.1.2. Recruitment

For the recruitment process, I utilised a short video in Arabic as a social media advertisement post accompanied with a link to the project website. The video was created with the help of a copywriter and a motion graphic designer. It was posted on the projects social media accounts and sent to various WhatsApp groups with an additional request to repost it to other groups. To ensure more dissemination in the geographical area of Saudi Arabia, it was also posted as sponsored posts on Twitter, SnapChat, and Instagram for 10 days to reach users in Saudi Arabia.

5.4.1.2.1. Social media campaign for recruitment

The use of social network for research can result in significant engagement of various demographic characteristics in developed countries, especially for observational studies and surveys. However, it may not always be the best method in comparison to traditional recruitment methods due to cost and limitations in achieving demographic comparability(247). My research focused on the use of Arabic online health information in a population that uses social media for health information as discussed in Chapter 3. By leveraging social media platforms, my study aims to capture a broad and diverse sample.

I used Twitter, SnapChat, and Instagram Ads managers to create my consumer recruitment campaign. These are the most used social media platforms in Saudi Arabia(248) after YouTube. The ad campaign design followed the steps of the investigator checklist to propose social media recruitment provided by Gelias et al.(249) to minimise any ethical issues such as privacy and transparency.

All three campaigns were set to start on 28 October 2021 for 10 days. Each campaign was allocated a budget of £50 which is the lowest possible amount for ad campaign on the chosen platforms. The audience for the three platforms was set as: all genders, 18 years of age or older, located in Saudi Arabia, and using Arabic as their language, without further specification for any targeted or custom audience.

However, midway through the campaign, adjustments were made to the targeting criteria. Specifically, the Makkah region was excluded, and the age range was narrowed to individuals over 40 years old. These changes were implemented intentionally to focus on a segment of the population that was not engaging or registering as expected in the earlier phase of the campaign.

5.4.2. Content Creators:

Content creators were defined as any healthcare professional currently providing health content on their personal social media accounts. I identified them through their participation in hashtags commonly used to provide health information in Arabic such as # صحتك_تهمنا (which means 'we care about your health'). Furthermore, I contacted creators who were recommended or raised as examples in consumer interviews.

5.4.2.1. Sample

To explore how the experiences of content creators can inform recommendations for optimising the way to provide Arabic online health information, I planned to sample diversity across gender, social media platforms (Twitter, SnapChat, YouTube, Instagram, blogs), and delivery formats (video, short texts, photos, long reads). However, it was difficult to recruit large numbers to take part in the study as I received large number of apologies due to time constrains.

5.4.2.2. Recruitment

I approached current content creators through direct messages or via preferred contact information they provided on their main channel. In addition, I used snowball sampling from creators who agreed to be interviewed to recommend me other participants who might be willing to participate or for them to recommend the interview to other content creators.

The direct message contained an explanation about why and how they were identified and an invitation to participate in the project, this was followed by a link to the website (Appendix 12 preview the recruitment message).

5.5. Topic guides

Topic guides were developed for semi-structured interviews in both English and Arabic. Content and translation were reviewed by representatives from the patient and public involvement panel (PPI) in Arabic, then piloted with members of the consumer and content creator groups. As the interviews progressed, the topic guide, which had open-ended semi-structured format questions, was iteratively developed, with questions omitted, added, adapted, and elaborated according to each participant response.

5.6. Data Collection

All interviews were conducted online through MS Teams. The choice of video or audio interview was given to participants. All interviews were conducted after the consent form was signed and the participant information sheet read. At the beginning of the interview, I welcomed each participant and thanked them for participating in the study. Following this, I introduced myself, the purpose and objectives of the interview and research project.

To make them feel comfortable, the first question was open and introductory asking about their typical internet usage as consumers. Content creators were then invited to introduce themselves professionally. After all main questions on the topic guide were discussed, participants were given the option to contribute any further thoughts or experiences that they wished to address before concluding the interview.

5.7. Ethical Considerations

Prior to the start of the study, all research materials (recruitment materials, topic guides, participant information sheets and consent forms attached as (Appendix 7, Appendix 8, Appendix 9, Appendix 10, Appendix 11, Appendix 12, Appendix 13, Appendix 14 and Appendix 15)) was prepared to be sent for ethical approval. Ethical approval was obtained from the local biomedical research ethics committee of Umm Al-Qura University (UQU) (HAPO-02-K-012-2021-08-723) and subsequently from the Research Ethics Committee of the University College London (20953/001). Ethical approvals are attached as Appendix 4 and 5, respectively. Initially, I planned to conduct the transcription and translation by myself, however, due to time constraints, I hired a professional Arabic transcriber and translator to transcribe all audio-recorded interviews. The amended ethical approval is attached as Appendix 5. In addition, the data sharing agreement with the transcription company is attached as Appendix 6.

5.7.1. Data governance

Participants were directed to the website containing relevant participation information. All participants were directed to sign the online consent form and given the option to print the form afterward. Participants gave their consent to participate in an online interview, to have the interview recorded, and were informed that they could withdraw from the study up to the analysis phase (two weeks after the interview) without providing any reason. If they withdraw from the study, their research data and contact details would be removed. To ensure anonymity, all participants were assigned a unique identity number. The study is compliant with the requirements of the General Data Protection Regulation (2016/679) and the Data Protection Act (2018).

The video-recorded interviews were conducted using the UCL secure account via the Microsoft Teams platform and securely saved on the Microsoft Stream UCL cloud for the period of the transcription. The original videos were deleted from the cloud after the completion of the transcription and checks.

The transcripts were conducted by a hired transcription and translation services company. MosTrans has been previously used by other PhD projects in UCL and proved to be good at honouring the UCL data sharing agreement terms and conditions. All recordings and transcripts were deleted from their records after I accepted them. I manually checked and de-identified the transcripts. All de-identified transcripts are now kept in a secure UCL drive and will remain for 10 years, as agreed upon by the ethics committee, to allow for post-publication reflection.

5.7.2. Researcher safety

To mitigate risks of online abuse or harassment related to racism or sexism on social media, new social media accounts and a new mobile number (for WhatsApp) were used for all project-related correspondence. An agreement was made between myself and the supervisors to terminate interviews if I was not comfortable and to discuss the matter with them if needed.

5.8. Patient and Public Involvement (PPI) Role

Public involvement played a vital role in shaping several important aspects of this project. This involved activities such as participant recruitment, development of topic guides, and testing the usability and accessibility of online registration tools.

PPI sessions were conducted mainly on the Clubhouse App, a new audio-based social media platform introduced to the Saudi population. It resembled a hallway in which anyone can start a room by stating a title. Contact between users in a specific room is audio based. When conducted, the algorithm would show rooms mainly in preferred languages. I opened rooms with titles in Arabic that stated "Do you live in Saudi Arabia? You can help with my PhD". I would host discussions where individuals from diverse backgrounds participated to explore various topics related to protocol development. These discussions addressed culturally appropriate recruitment methods, including the use of incentives, effective communication across genders, strategies for using social media advertisements, preferences regarding interview duration, and extensive deliberations on video versus audio-only interviews. As a result of these meetings, several changes were implemented. I chose an incentive platform that included donation options and opted not to mention the incentive in the body of the invitation. This decision aimed to prevent potential participants from hesitating to participate out of concern that it might appear they were participating solely for monetary gain. Additionally, I allowed the option for audio-only interviews to accommodate participants' preferences, identified the optimal times for advertisements in the country and ensured that the length of the interview was not disclosed in the first sentence of the advertisement material to not repel any potential participants.

5.9. Analysis

I used a reflexive thematic analysis method to analyse the data for my thesis. Thematic analysis is the most common method of qualitative analysis used in health research(250). Braun and Clarke suggest that thematic analysis (TA) can be performed in three broad types: coding reliability TA, reflexive TA and codebook approach. Beyond this classification, there are diverse TA methodologies that do not fit neatly into one category and instead integrate elements from multiple types. These three distinct approaches to TA can ranging from coding reliability to reflexive methods(251). Braun and Clarke (2021)(251) described the reflexive approach as it “involves six—recursive—phases of: familiarisation; coding; generating initial themes; reviewing and developing themes; refining, defining and naming themes; and writing up”(p.39). During reflexive thematic analysis, theme development necessitates extensive analysis and interpretation by the researcher. Despite encompassing seemingly diverse data, themes bring together implicit or hidden meanings. The coding process is flexible and natural, allowing for codes to develop as a means of capturing the researcher's deepening comprehension of the data(251). The flexibility of reflexive thematic analysis and the reiterative process allowed me to immerse myself in the data and refine my analysis.

5.9.1. Analysis as performed in the study

The following steps were followed to analyse the data using thematic analysis methods. ATLAS.ti version 22 was employed to manage the data:

1. All recordings were transcribed verbatim in Arabic by myself or a professional transcriber.
2. I read over all the transcripts while simultaneously listening to the recordings to immerse myself in the collected data and to check for any inaccuracies in the transcription.
3. I selected two of the richest transcripts for both groups to be translated and to discuss the different possible codes and themes therein with my supervisors.
4. The coding was completed using ATLAS.ti version 22 by highlighting the codes, adding the code names and any further elaborations as a comment. At this point, the same two transcripts were sent to the supervisors after being coded for another discussion and for further amendments. After the discussion, I refined my codes and independently coded the rest of the interviews utilising the same method.
5. The two translated transcripts were coded independently in both languages.
6. The themes were developed inductively from the data by writing two separate summaries about the story of participants. These stories were then shared

with my supervisors and discussed to form initial themes. Stories attached as appendix 17 and 18

7. Diagrams of themes and codes were created for both groups to further develop the connections between the themes and codes, alongside discussions with supervisors.

5.10. Reflexivity

From when I was an undergraduate medical student, I have been deeply passionate about the issue of providing online health information to consumers in Saudi Arabia for quite some time. In response to the need for expanding Arabic content on the internet, a group of medical students and I connected through social media and leveraged our medical knowledge and understanding of medical English to launch HealthyGate, a specialised blog providing health information in Arabic. A year after its inception, the blog received the first prize in the specialty blogs category at the Hadeel Prize. However, the blog was eventually closed one and a half years later. The closure of HealthyGate was disappointing, but the experience stayed with me for ten years. Since then, I have witnessed many similar initiatives launch and subsequently shut down due to various challenges and limitations. One of the only players I have seen successfully navigate these obstacles and continue to grow is individual healthcare professionals who leverage digital platforms and technology to reach a wider audience, provide reliable health information.

During my Masters in Health Informatics, I studied the quality of available Arabic online health information, focusing on pregnancy and labour. The results were of interest to me and confirmed my view that change is needed, confirming that it is essential to engage with consumers to bring about change.

The personal experiences I have stated above provide some of the biases and assumptions I brought with me when conducting this research. Assumptions such as ‘it is just hard to sustain a platform for health information’ and ‘Arabic is hard for healthcare professionals’ for example were tested throughout the interview and analysis process when I found them to be more complex than I originally thought. I ensured to set all these assumptions and experiences aside when developing the topic guides for the interview to be unbiased and comprehensive with help of my supervisors, colleagues and PPI participants. This process is crucial to ensure that the data collected is not influenced by my preconceptions.

As a Saudi woman, I'm familiar with the traditional gender segregation norms that have shaped our society. Because of this understanding, I proactively planned the interviews to be online to address any potential reservations from male participants. Interestingly, male participants joined the interview from places away from their houses (either cars or offices) but remained engaged during the interviews. Most consumer participants preferred audio only interviews, while. content creators preferred video interviews. During the interviews, I presented myself as a “researcher” and avoided mentioning my clinical background. This provided the participant with a relaxing space to encourage open and honest responses.

Despite my efforts to accommodate as many participants as possible, technical difficulties with MS Teams resulted in delays. One participant was unable to access Teams, I then used Zoom to conduct the interview and recorded it on Teams. Moreover, another potential participant was unable to download the app on their mobile and did not have other devices to access the internet. For these reasons, both these participants were excluded from the study.

Additionally, one interview with a content creator was excluded. My concerns were raised when the creator mentioned that he posts about anything and everything he can find any supporting evidence with no prior knowledge about the topic. After the interview, I conducted a thorough search on the content creator, discovering that he lacked any medical licence or qualification. I was deceived by the huge followers of his social media accounts, at the time of the interview where he had over 1 million followers on Twitter alone.

His follower count appeared to influence his perception, as he claimed that his biggest challenge is envy and peer clashes. Interestingly, his interview was the only one who mentioned any interaction with the Saudi Ministry of Health. He mentioned official reasons as reason for why he might refrain from posting about something, believing that some information is sensitive and can be used by the political opposition or those seeking to highlight governmental mistakes. Therefore, he consulted with his contact at the ministry if he was in doubt about a topic to get the green light. He was told that his platform has a wider reach than some TV channels, and therefore, he needed to exercise caution and not post everything. Sometimes green lights come with conditions about what and how to discuss the topic. For example, during the COVID-19 pandemic, he was instructed not to mention that there is no cure, but rather state that efforts were ongoing to find a or a treatment.

I found that consumers use social media to connect with doctors, leading to a reciprocal relationship where both parties influence each other's presence. This phenomenon became evident in the analysis and is also reflected in Saudi Arabia’s social media-centred information system. For example, new bus system routes are only available on Twitter despite being ideally accessible on their website. I have even debated this issue with a family member who works closely with policymakers; they argue that using social media is the best way as people are actively present there, even if they may not want to be. However, this approach overlooks people’s true preferences, as quantitative-heavy policymaking can fail to capture them accurately. This situation fuels a circular argument prevalent in various aspects of life and situations in Saudi Arabia.

As the only Saudi person on my research team, I made an effort to engage with fellow Saudi PhD students to discuss my research and reduce any biases. Additionally, having British supervisors required me to regularly clarify my ideas and assumptions, which greatly aided the analysis process to be unbiased.

Chapter 6. Consumer interviews findings

6.1. Overview of the chapter

In Chapter 4, I outlined the aim and justifications of this PhD empirical work. Chapter 5 was dedicated to describing the methodology in crucial detail. Chapter 6 and 7 will detail the results of each part of the empirical work and the discussion of the results. The overall discussion of all results will be provided in Chapter 8.

This chapter is dedicated to interviews with consumers of Arabic online health information in Saudi Arabia. Individual interviews were conducted online mainly as audio only (for both myself and the participants) and according to participants preferences. During the interview, participants were asked about their experiences using the internet for health information, their views on the use of social media for health information in Arabic, how they evaluate the status of currently available Arabic online health information content and how it might be portrayed in an ideal scenario. The results and further discussion will be presented in this chapter, detailing the recruitment results and demographic characteristics of the participants. Following this, I will present and describe the results in three sections: participants' attitude towards the use of the internet for health information, factors that contribute to their attitude and how they are accounting for this, and finally their desired state of Arabic health information.

6.2. Background

As mentioned in Chapter 1, the use of the internet to access health information as a primary resource has been increasing. The need and use of online health information varies between groups of people and cultures. Factors such as age, education level, and digital health literacy can affect individual’s level of digital health literacy. Digital health literacy or E-health literacy is defined as 'the ability to seek, find, understand, and evaluate health information from electronic sources and apply the knowledge gained to addressing or solving a health problem.”(29).

At the time of the interview, most social media platforms had their own process for approving individual accounts: a verification mark (blue tick). Since then, Twitter’s new management has allowed any individual to purchase their own verification (blue tick). Therefore, it should be noted that when participants referred to verified accounts, they are referring to accounts that went through the platform's process to verify their identity.

6.3. Social Media Recruitment Results

Participants were recruited through an animated short video posted as paid advertisements on social media platforms and through the WhatsApp chat mobile application. This was conducted through requesting different groups in my personal and professional networks to disseminate the invitation to their circles (more details on recruitment are provided in Chapter 5). The results of each recruitment platform are detailed in Figure 4. Of the total 560 visits to the project website, 52 people signed up to participate in the study and 26 of them attended the interview. Most of the participants (n=17) responded to the invitation received via WhatsApp, followed by SnapChat (n=6) and one participant each from Twitter and Instagram.

Figure 6 Social media recruitment results

6.4. Description of participants

Of the 26 participants interviewed, 15 were female and 11 were male. Most of the participants were in their 20s and 30s, reflecting the demographics of the country. Most of the participants had a bachelor's degree. Detailed demographics of the participants are presented in Table 1.

Table 1 Demographic data of consumer participants

Gender	Male	11
	female	15
Age group	20-29	10
	30-39	9
	40-49	4
	50-59	2
	60-69	1
Education	high school	4
	diploma	3
	bachelor	12
	postgraduate	7

6.5. Consumer attitudes toward the use of the Internet for health information

To describe participant attitudes toward using the internet for health information, I will organise my analysis according to three main themes: the interpretation of the participants of what is health information; the experience of the participants with the internet for health information; and their perception of the state of current available Arabic online health information content in general and on social media.

6.5.1. Interpretation of health information

The way in which participants interpreted the question about their use of the internet for health information revealed two categories: information about a healthy lifestyle such as diet and exercise and information about medical conditions.

These categories became apparent from the questions or responses of the participants. Younger participants usually equated health information with information related to a healthy lifestyle such as diet and physical exercise. This difference influenced how participants described the current state of available content in Arabic but did not affect their use and trust.

> **P2**: "I noticed that with social media especially, I can benefit in this side thank God. Even to the point that I notice that all the time I am learning more from social media than I am entertaining. (…) I can see that this person who wrote some information yesterday, they are actually applying it today at lunch or in their exercise." (F, 20, High School) (Gender, age group, education level)
>
> **P10**: "My use of the Internet is to search for information from experts who have found the thing I want and take the information they have and apply it to me and try. For example, in the health field I weighed 120kg, so I tried 7 times to lose weight, and I couldn't." (M, 20s, diploma)

6.5.2. Consumer experience with using the Internet for health information.

Each participant had a unique story of using the internet for health information. However, their descriptions of a time they remembered using the internet for health information can be described according to why they did it, how they did it, what they found, and what they did with the information they found.

6.5.2.1. Why they did it

Most participants were motivated by a prompt to use the internet for health information, for example, a symptom, a diagnosis or a required intervention for themselves, a parent, spouse, child, or friend. These prompts were sometimes before visiting a healthcare facility, for example, a child with a minor fall; after a healthcare professional visit, in a medical diagnosis; and between visits, or to search for information about a medical or surgical procedure. Therefore, the order in which they chose the internet from other sources varies.

6.5.2.2. How they did it

Most participants started their quest for health information using Google, the most commonly used search engine in Saudi Arabia(119). Some used YouTube and very few used other search engines, social media platforms, the search facility within a specific website or Google Scholar.

Whether the participants utilised a search engine or a social media platform, they mentioned trying a different search term instead of browsing more results pages if the first few did not satisfy them. This was due to the belief that google would present the most relevant search results and if that is not what they were looking for, altering the search term would be more appropriate. Furthermore, one participant mentioned not browsing more search results pages because of how irrelevant the last few results on the first page were.

> **P23**: “the first couple of results are sufficient, the first, second or third results and that is." (F, 30s, Bachelor)
>
> **P24**: "Researcher: Do you browse further than the first result page on Google? Guest: No, no, just the first page. Researcher: Always? Guest: Yes. Researcher: Why? Guest: Often the second and third pages show me sites that are not famous and certainly not reliable. Usually, I find what I look for on the first page." (M, 20s, High School)

The use of Arabic language to navigate their need for health information varied between participants. Some participants only used Arabic, while others used the internet to translate their questions from Arabic to other languages or vice versa to reach the content they look for. Even if they were fluent in other languages, they seek it in Arabic for a better understanding.

> **P22**: “I usually go directly to Mayo Clinic website. If I couldn’t find what I am looking for I go to Google. (…) Mayo Clinic’ Arabic pages. (…) If I want to understand something, I need it in Arabic. If it was complicated, I want simplified Arabic” (F, 20s, Postgraduate)

6.5.2.3. What they found

For sources of online health information, participants mentioned finding results from social media platforms, personal anecdotes from bloggers, and various news, entertainment, and encyclopaedia websites. However, there were two health-focused websites that were repeatedly mentioned: WebTeb (webteb.com) and the Arabic pages of the Mayo Clinic website (mayoclinic.org/ar).

6.5.2.4. What they did with the information they found

Although most of the participants noted that they usually find some information online in Arabic, they expressed uncertainty regarding the reliability of the information. Consequently, their decisions after finding what they were looking for varied. This may be related to their motivation for researching online health information and the stage of interaction within the healthcare system. It can also indicate their views on the hierarchy of information sources and their trust in them.

Participants who sought information online before visiting a healthcare facility generally reported visiting a doctor, particularly when they found confusing or fear-inducing information. However, one participant reported that she chose to seek advice from her mother rather than a healthcare professional. After receiving reassurance from her mother, she followed her advice rather than visiting a healthcare facility.

Participants who searched for information online either after receiving a diagnosis or before undergoing a medical intervention found the information helpful only if it was consistent with what their physician had told them. They considered personal anecdotes from individuals with similar medical conditions as a useful but unreliable resource.

> **P3**: “I was searching to see if there was anything about my diagnosis, I found people describing their conditions, but I couldn't find any information from a doctor. Yes, I found people, for example, a blogger who wrote about her medical condition, having been through something similar, and she wrote in Arabic. But nothing about the disease in Arabic. No material, mentioning the causes, details, and the treatment methods in detail, I couldn't find any in Arabic. I can't generalise [for all conditions] based on this case because, as the doctor already mentioned, it's not a very common condition. So, maybe I can't generalise, but this was my experience.” (F, 30s, Postgraduate)

A participant who would search the internet for friends and family after receiving a diagnosis filtered the information she found online, only sharing positive information.

> **P25**: “I won’t say instead of them, I am looking because they are someone I care about. so, I want to know the situation they are going through. If the information [found] is not good, I do not share the information with them. I just share with them the positive information. If it promises that the situation will improve or that the situation will get better after days.” (F, 20s, Bachelor)

6.5.3. Perception of the state and usefulness of currently available Arabic online health information.

The participants had varying perceptions about the current state of Arabic online health information content, with several causes and reasons. Younger participants who sought information about healthy lifestyles generally expressed satisfaction with the information they found online. One participant was happy with the internet content because she can’t trust healthcare professionals which might be caused by her believes in misleading information and conspiracy theories.

> **P1**: “Sometimes I don't believe in the doctor's words until I read the research and see the medicines, he gave me and its complications, so thank God for the grace of the Internet" (F, 40s, High School)

However, other participants noted that the quality of the Arabic online health information content depended on the specific medical condition. While it was easy to find reliable information on common conditions such as diabetes and hypertension, information on rare conditions was harder to locate. One participant was frustrated that her proficiency in English gave her an advantage over others with the same condition who were unable to find simple answers in Arabic.

> **P3**: "when I am looking in Google, I can’t find a health site that diagnose cases and there are no doctors who upload on YouTube or Twitter on these things with details, meaning in their specialties, meaning accurate explanations and details in Arabic. You find it in English and find specialised people, each with their specialty, you find

> it. (…) when we come to look around you find yourself reaching a point where you will not find anything in Arabic, you reach points where after that, it's all English (…) exactly, there is a certain level in Arabic, I find it, and after that nothing." (F, 30s, Postgraduate)
>
> **P17**: "It is scattered, and nothing is systematic or actually reliable." (F, 30s, Postgraduate)

Some participants expressed a lack of trust in the available content, with opinions ranging from the belief that it was full of fear-inducing information, myths and disinformation, highlighting a need for improvement, oversight, and supervision. Despite appreciating the efforts of websites such as the Saudi Ministry of Health, some participants felt this was not sufficient

> **P25**: "There is ongoing development; the information is becoming deeper and more simplified in its delivery, especially on Twitter. But on Google, it still needs significant improvement. Someone who relies on it completely and generally could end up experiencing delusions and very unpleasant effects." (F, 20s, Bachelor)

One participant had a very negative opinion, describing the available Arabic online health information content as a joke, with nothing trustworthy available. This participant also found it challenging to recommend any Arabic sources to her students.

> **P20**: "Most of it is a joke, I mean, it's mostly time-consuming. Firstly, it is mostly spreading rumours rather than facts—more chaos than truths. I feel like it's meant to instil fear and terrify people, testing the extent of their intelligence. Some of it is just nonsense." (F, 40s, Postgraduate)

6.5.3.1. Social media use for health information

Participants' views towards the use of social media platform for health information varied between strong approval, strong dismissal, with some expressing balanced views.

One participant found information on social media platforms to be more reassuring than google results because of how approachable and simplified doctors on social media are when providing information. She described an experience where she had come close to panic because of Google results and felt better after checking Twitter.

> **P25**: “I have come close to entering a panic attack and intense overthinking because of Google. In contrast, on Twitter, when I see information, they simplify it, and doctors reassure patients that the matter is simple and easy. Their interaction with patients inquiring about a medical condition is very excellent." (F, 20s, Bachelor)

One of the commonly mentioned aspects was the role of social media in myth busting or fighting mis/disinformation, where participants had different views. Some saw it as beneficial that a healthcare professional can bust a trendy myth. Others were annoyed by the repetition of the myth where mis/disinformation can make it stick or how precious time is wasted busting myths and fighting disinformation instead of providing and enriching Arabic health content.

> **P20**: “tell me what's right, but don't say what's wrong because you want me to forget the mistake. So, tell me what is right. Then, when you say the right thing, focus on it and say it in more ways than one, so that I understand it as public. As the general public, you need to communicate with them according to their level of understanding.” (F, 40s, Postgraduate)

> **P14**: “Yes, I see many awareness campaigns, may God reward them. Doctors share, but you know, (…) Instead of just denying, they should provide useful information.” (F, 30s, Bachelor)

Although social media platforms were not designed to be a teaching platform, their use for spreading health information makes it easy for consumers to describe their experiences as learning useful information in an entertaining environment.

> **P2**: “I spend a lot of time on social media, so I am happy that this time is not just spent on nothing, no, I am benefiting from it as well. I mean in a lot of time is wasted in social media, but I am happy that I am also learning, and the time is wasted on something good” (F, 20s, High School)

6.6. Factors that contribute to their attitude and how they are accounting for them.

Although participants were unable to address the lack of detailed Arabic online health information, they used various methods to evaluate the information they found online to determine if it was trustworthy and reliable. These methods included looking for supporting comments, checking if the information was repeated across different sources, and evaluating the structure of the website's URL.

When dealing with social media information, participants used strategies such as checking the following lists of accounts they find information from, verifying the source of information by trying to go back to the origin of the information, and relying on their intuition to assess the credibility of the information.

6.6.1. Evaluating available information online

Participants used various methods to evaluate the reliability of the information they found online. One method was to check for repetition of information from different sources, which was generally considered as a sign of credibility. However, participants noted that copy-and-paste content was viewed negatively and could compromise the reliability of the information.

> **P15**: “First of all, from people's reactions in the comments section on YouTube, I see many of them sharing their experiences about what happened to them after trying what the doctor suggested. Secondly, I expand my research after hearing this information. I like to focus on a specific topic, for example, hair care, and research it more than once, not just from one doctor. Then I go and read on WebTeb to see if there’s something common between them. Honestly, this is what solidifies the information for me and builds my trust in the information I’ve gathered.” (M, 20s, diploma)

> **P19**: “Sometimes, what is said may not seem logical; what you feel is usually based on intuition. If we find this speech repeated in more than one place in the same way or in a different way but with the

> same meaning, you may feel that it's okay, meaning it's correct.” (M, 30s, Bachelor)
>
> **P25**: “they are not reliable because basically all the information is the same. It's mostly copy-pasting from websites, where they copy and paste information together.” (F, 20s, Bachelor)

Participants also checked the comments sections for supporting comments, particularly from other healthcare professionals. University students, in particular, evaluated the quality of websites based on their URL structure. Websites ending with .org, (referring to an organisation), or those starting with https://, indicated a secure website and were generally regarded as of higher quality. Conversely, Wikipedia was consistently viewed as a low-quality source of information. These evaluations were based on what participants had been taught during their studies as high- and low-quality websites, in general, and where to research and find high quality references.

> **P7**: “No, those with ".org" are reliable, so I go by their word. I mean, everyone with me in my department says it's reliable. It's considered reliable if it ends like that, and we also learned the same thing at the university. If it ends like that, it's reliable.” (F, 20s, Bachelor)
>
> **P25**: “Firstly, because I think I went to Wikipedia, and many people access and edit information on Wikipedia. I can't rely on it unless it's a reputable site.” (F, 20s, Bachelor)

6.6.2. Social media information

Facing new information on social media, in addition to individual verification, participants will assess the reliability of information by either ensuring the information is true (reliable) and the source of the information (social media profile for example content creators) is trustworthy (credible). To assess the truthfulness of the information, they might try to trace the information back to the first source if they can or check the reactions of other people in the comment section to the specific information. If they found the initial source who posted about it, they can check their profile information, including their following and follower lists. So, if they found other healthcare professionals agreeing in the comments or that someone, they trusted following the account, it can elevate the credibility of that account.

> **P6**: “Arabic [health] content needs to be regulated because myths and rumours are increasing. Other than that, the average person and the doctor can post about health information on social media. which means that you don’t know from where to take the original credible information.” (M, 20s, High School)

Some participants emphasised the importance of finding the first source who posted on the topic or relying on their own intuition to assess the accuracy of a certain piece of information.

> **P15**: “Honestly, the person plays a role, like [influencer]. My opinion about him only changed recently when the trust in him was not 100%. A simple mistake in information he provided could shake that trust. But before this information, I trusted him completely, number one. I didn't try to look for other people after that. However, after this incident, I discovered that I need to search from more sources.” (M, 20s, diploma)

> **P21**: “anyway, when any information is spreading and going around, I go and search for it, because of the herd policy, all the people are talking about the subject. so, you go and you find the same story everywhere until you find the details. I start to find the source of the topic, from where it came, I like to check the origin of the foreign source so that the topic is not just a conversation of gatherings. I do try to reach the original source. because the sources are always impossible to be Arabic, unfortunately, so the source must be foreign, and someone translated it, and it began to spread.” (M, 50s, Postgraduate)

Participants found it easier to assess individual's social media accounts by conducting a Google search of the account holder’s name and checking for their presence in real-life settings, such as in a hospital or polyclinic directory, to confirm their qualifications. Furthermore, some participants occasionally use the ‘followed by’ feature that allows them to check the common people between their own profile and the source profile. The verification mark assigned by many social media platforms did not make a difference in most participants’ experiences with social media. This was mainly because they were aware that even if the account has a blue tick (indicating that the account is verified), if they were posting about a topic outside their area of expertise, it could not be trusted. Thus, social media was seen as easier for verifying the credibility of people behind the account and possibly then information as more trustworthy

> **P5**: "Even when I read, I have to make sure that I consult certain people. Maybe when it is on social media, (…) unlike Google and the Web, because sometimes the information can be old and you don't know who wrote it, but when I search social media, I know who wrote it and I can make sure whether it is true or not, for example, I can check how many people posted about it, sometimes not only one doctor, no I check for more and I can make sure if the information is true or not. and my uncle is a doctor and his wife sure I will go back and ask them is this information true or not.” (F, 20s, Bachelor)
>
> **P2**: “rare that I hear that Oh I swear there is a good page on the internet I can read from it. but in social media it is easy to know that there is a good person. I can know from their followers count, also if his account is verified for example, if he put his certificate and put his information I mean in a clear way. but on the internet, it is not easy that I hear that there is a good page so that I open it and go read in it” (F, 20, High School)

As mentioned in Section 6.5, younger participants who are more concerned with healthy lifestyles preferred social media content that demonstrated the effects of the advice provided. This included physical trainers or dietitians showcasing their progress, exercises and nutritional meals. Additionally, healthcare professionals can also post success stories about their patients and clients to make their advice more approachable for consumers.

> **P5**: "R: How much do you trust online health information available in social media?
>
> P: Ninety percent. because it is certain that the person who raised this topic won’t raise it or won’t base it on something that doesn’t exists. sure, it is something that exists and one day I will encounter it.

> And if I didn’t one of my acquaintances will and I can inform them of it." (F, 20s, Bachelor)
>
> **P19**: "Frankly, there is nothing but intuition on the subject of social media because it is wrong to believe it in the first place." (M, 30s, Bachelor)

6.6.3. Competencies related to the use of the internet for health information

The variety of methods mentioned in the previous section deployed by the participants made their ability to judge available information the most common reason that some participants acted as a proxy (surrogate information seeker) for others around them. Other reasons for a proxy search included English language proficiency and access to the internet.

> **P2**: “I feel that it is difficult to reach an excellent page, I mean that is adequate. and I do not know who is making this page, is it really a person who has experience and specialises in the subject or not, because I cannot see it not like social media, I can see this person who presents the content often when he is specialised and so on” (F, 20, High School)
>
> **P21**: “I mean, I start to see the source of this topic from where it came from, where did it come from, I like to check the origin of the foreign source so that the topic is not just a talk of councils and this said no I try to reach because of this it is always impossible for the source to be from Arabic platform, unfortunately, so the source must be foreign and one translate it and start spreading.” (M, 50s, Postgraduate)

6.7. Consumers’ desired state of Arabic Online Information

When asked about their ideal state of Arabic online health information, participants mentioned wanting a single resource for health information. This reflects a preference for a reliable source they can trust, rather than investigating each piece of information they find online (on various platforms). They can then utilise the information found online and employ it as a reference. Participants would therefore trust that referring others would have the same outcome, as well as employing key information as evidence in a social argument. Two participants mentioned two other speciality websites as an example of a trusted and comprehensive resource in Arabic, these resource websites were linked to football or finances. The ideal resource varied between formats including a website, a mobile app, or a platform that can be accessed as a website and an app.

The following views of different preferences or criteria for a credible resource were expressed by all participants, regardless of whether they preferred a single resource or requested for different factors to be available. The following criteria was usually mentioned in their response to the dream question, where I questioned participants about the impact of specific factors.

The description of the dream source by participants can be described in two main categories: those that affect trust and those that make it easy to use and navigate.

> **P8**: " There are supposed to be 10 platforms, for example, now when we talk about stocks there is a famous site, people go to that site, they take it from there, it is the first one Arqam site for us in Saudi Arabia. Do we have something like this in the health sector, I don't know. (…) Now if someone came to talk about medical information, I may look for the information not only to convince me but so that it is also a reliable reference between me and him." (M, 40s, Bachelor)

6.7.1. Factors that influence trust

Comprehensiveness: Covering a wide range of subjects, topics within a subject, or levels of detail. Examples of some topics that participants claim to be harder to find now are child health, metabolic diseases and radiology.

> **P1**: "The most important thing is its comprehensiveness. that there are many things in it, it means that it whatever the topic is simple or a simple question, I find the solution, I find the information." (F, 40s, High School)

> **P2**: "yes, comprehensive in all aspects” (F, 20, High School)

Authority of the Author: Trust on online authors was directly linked to detailed information. Such information can include, but is not limited to, the name, picture, qualifications, credentials and the place of work. Licensing for health professionals was one of the issues that had multiple points of view. While some participants strongly advocated for an entity to regulate posts on online health information, others found this approach burdensome, arguing that it could delay the dissemination of critical information. They emphasized the importance of professionals posting content within their area of expertise. Another participant proposed a more practical solution: holding individuals accountable by penalizing those who spread false or inaccurate information, rather than requiring licensing for all healthcare professionals.

> **P5**: "Sure, personal information and if I enter his page I can check from where he graduated. Where is his degree from. What Board and practical experiences. and sure, where is he now, where is his clinic and contact numbers and customer service. Sure, not just his name only.” (F, 20s, Bachelor)

> **P6**: "when I am in doubt and checked the name of the doctor and found it, I would most probably feel comfortable that the person who posts the information is a well-known person in this field.” (M, 20s, High School)

> **P23**: " if he is a famous or well-known person who has done it, for example, a doctor or a professor that people know." (F, 30s, Bachelor)

> **P19**: "when doctors who are famous and have their big names in organisations like this for sure we trust them." (M, 30s, Bachelor)

> **P19**: " This could delay the dissemination of information. There might be a system with excellent research that could change humanity, but it didn’t reach the public due to licensing or something similar. It might seem like a good idea to rely entirely on the Ministry of Health’s approval of a post and consider it 100% trustworthy. However, here lies the issue: when the ministry approves or licenses a person, it doesn’t necessarily mean they review all of their content. This creates

> another problem—while we trust the content completely, unfortunately, it might not have been thoroughly reviewed and could be incorrect. Personally, I prefer not to make licensing a requirement, as it can create confusion." (M, 30s, Bachelor)

> **P24**: "On social media, it's not about licensing as much as it is about accountability. For example, if a particular doctor spreads false information, the Food and Drug Authority should issue a statement labelling it as a rumour. If this doctor spreads misinformation or baseless claims more than three times, and if asked for references and they turn out to be from commercial websites, then there should be consequences, such as a penalty if they continue discussing medical topics. However, requiring every doctor to obtain a license, in my opinion, is overly burdensome." (M, 20s, High School)

Advertisement or paid content: the effect of advertisements based on trusting an author was a controversial point. Although most participants would prefer a website without advertisements, many of them understood the role of it in generating income for the owner, especially if the information was freely available. The type of ad placed was an additional point that the participants disagreed on.

> **P23**: "it is normal. It doesn’t make a difference. all platforms have ads even on social on Twitter and Instagram normal. You are forced to use this thing, and you want to benefit from it, and certainly the owners of this page or application are also benefiting." (F, 30s, Bachelor)

One participant argued that if they rely on it for income, there should be no health-related advertisements.

> **P11**: " the ads support the platform. they need this support with the presence of ads. but I don't know ads reduces confidence. A while ago I was reading an article. When reaching the end, I found it was marketing for a doctor in the clinic, so I knew all the information was for persuasion, so I changed my mind in the end. (…) keep advertisement, but it is not an advertisement for the same doctor, it is

> a normal advertisement, clothes, anything, but not the medical side." (F, 30s, Postgraduate)

Another participant viewed non-health-related advertisements as negative.

> **P6**: “there is no problem if the advertisements are medical, if they advertise for another clinic or doctor but advertisements that are outside the scope of medicine are not good for a medical website.” (M, 20s, High School)

The number of advertisements placed, however, was a point almost every participant agreed on. All participants stated that the less advertisements that were posted on online health information platform, the more beneficial it would be.

> **P14**: "According to their appearance, sometimes they appear in a way that tells me don’t enter this site again. if it is purposeful ads. Unfortunately, in some ads, you also get annoying ads. it may be in an advertisement, but in a way that does not cover the content for me. meaning it takes a small part and is something general. (…) If it [fees] is small and I trust it [the platform], I will pay for it." (F, 30s, Bachelor)

Some participants stated they would prefer to pay for the content and avoid advertisements. One participant suggested a donation option instead of subscription for paid content and another pointed that donation policies in Saudi Arabia is complex.

> **P5**: “Certainly, if it was a paid application, it would be better than having advertisements in the middle of the application, honestly.” (F, 20s, Bachelor)

> **P18**: “No, if there are advertisements, the type of advertisement matters. Some advertisements are despicable, clearly fake, like about currencies and such. For me, I despise websites with such advertisements; it weakens their credibility by 80%. There are honest advertisements, and for me, a trustworthy site is not harmed by them or by sponsorships. (…) people understand that the content needs support, and the primary support for news channels and websites is

> from such things. (…) Researcher: Someone mentioned having a donation option? Participant: I don't want to get into that because it has other aspects. I say advertisements are much better than getting into things like that. Researcher: Is it because of other legal aspects? Participant: Yes, its legality is very troublesome and monitoring it is a problem and burdens the person managing the website or whatever it is." (M, 30s, diploma)

Up-to-dateness and references: last updated date (from content creators) and references were key data that most participants believed others found them useful, however they did not prioritise this data themselves.

> **P11**: "if there is some information in which there is a reference in which the name of the reference is written. sometimes the degree of confidence of the doctor in his information, the way he provides the information, improves the degree of confidence in it, this also has a role." (F, 30s, Postgraduate)
>
> **P6**: "honestly, it has a benefit, but most probably no one will check the references. (…) especially if the website or the person who posted it is official, no reference is needed." (M, 20s, High School)
>
> **P11**: "It is important for the things that are renewed. for example, currently Covid-19 topics. (…) of course, the date of updating the information is important. but in fixed things such as liver disease and things that often have a certain system, I mean, they are the same, unless something new comes." (F, 30s, Postgraduate)

However, one participant highlights the importance of credible, peer-reviewed references in distinguishing reliable information from that provided by unqualified individuals who present themselves as doctors.

> **P20**: "I generally don't trust anything without a proper reference. Honestly, when you tell me about forums where everyone is just sitting and chatting with their friends.
>
> Researcher: What do you mean by a proper reference?
>
> Guest: I mean, reliable references like those from universities, accredited journals, references from the Ministry of Health in any

> country, references from major hospitals. It doesn't work for me if you tell me, it's from some doctor. He might call himself a doctor. My son follows someone named Doctor So-and-So, and when I heard him, he's not a doctor at all. He's a university student who has a website called Doctor, and he has nothing to do with medicine at all." (F, 40s, Postgraduate)

Impartiality: Although expert authors are recommended, the way they present the information is crucial. Their voices should be impartial, listing all available options.

> **P11**: "I like the doctor who is impartial to opinions, because science is renewed every day. but in my opinion, it affects my confidence in the information, when I see a doctor who is fixated about information, I cancel his information, this thing is important." (F, 30s, Postgraduate)

Recommendation by trusted healthcare professionals: this may influence the trustworthiness of an Arabic online health information source.

> **P9**: "how will I reach people? This is a bigger problem. how will I reach people? So, if something official announced in universities that spreads among male and female students, everyone will tell his family." (F, 30s, Postgraduate)

Authority of the owner: Most participants stated that all the factors mentioned above can be dismissed if the source was from a trusted entity with a recognisable logo.

> **P5**: "Yes, honestly, its existence will make me trust the information more. because the reputation of these hospitals is better than other hospitals. I feel that if there is a logo, it will affect the information. (…) Yes, I can be content with the logo. (…) In this institution, all people are good, and it will not matter who wrote it." (F, 20s, Bachelor)

6.7.2. Properties that affect ease of use and navigation.

Search functionality: Participants suggested multiple filters and search criteria to facilitate finding accurate online health information they required. Body part, age-based information to view information targeted to a certain age population, speciality-specific, and symptom-specific filters were some key ideas for filters and search functionality that participants suggested.

> **P25**: “divided according to specialities, as if it is a hospital. I mean, if I feel that I need internal medicine, I find internal medicine department, sorted from simple to the most complex or very common diseases [first]. then I can see the symptoms, so I can know what I have. So, I see this is better, easier and organised.” (F, 20s, Bachelor)

> **P23**: “I write down the name of the disease or symptoms that I have, and it shows me what it is.” (F, 30s, Bachelor)

Information level: Providing both a summary for someone who needs superficial knowledge as well as offering more detailed information are essential.

> **P3**: “for example, if I ask you about a need related to the brain and nerves, it is in the details of the brain and nerves. go to the details, I want to go to the details, I need it as if I am going to the doctor, I want to hear everything, and do not deal with me as if I am a person at the level that there is information that I will not understand, tell me all the details, I want to hear everything.” (F, 30s, Postgraduate)

> **P6**: “If you write in a detailed way and in the end write you bullet points, something a summary, it will be better.” (M, 20s, High School)

Format: Content format as in written, audio, pictures, or videos were all requested by participants. One participant suggested that any format could be used, if written information is provided first.

> **P8**: “The real effort is creating the content. the formats are simple I call a designer no matter how high the cost is. I can find Designers, Montage Producers, Actors, and motion graphic designers. When I put effort in the content, I can fit it in different formats. (…) let it spread in all formats, the more varied [formats], the more they spread.” (M, 40s, Bachelor)

Arabic language forms: Participants' preferences and views of usefulness for a wider community varied with respect to the use of classical Arabic or local dialects. Some participants prefer classical Arabic because they perceive it as more formal and authoritative, while others prefer local dialects because they find them easier to understand. However, many participants prioritise content that originates in Arabic rather than translated content, regardless of the language form used.

> **P5**: “Often what I see written is in English or German -I don’t know why- but it is the most common [languages in my timeline]. If it is translated from either English or German, I see the numbers of retweets or likes on them not as high as when the content is created in Arabic. if the content is created in Arabic, the spread is wider.” (F, 20s, Bachelor)

The use of classical Arabic or local dialects, perception and preferences are varied between participants. Local dialects were preferred for their accessibility and widespread understanding among the general public, making information more acceptable and engaging on social media. Classical Arabic was preferred for its universal comprehension, prestige, and reliability, especially in professional and medical contexts where accuracy and confidence in the information are crucial. Some participants phrase their responses to their preferences according to what they perceive as most useful for a wider community instead of what they personally prefer. Which reflects their observations on social media regarding which content gets more engagement, their belief of the broader comprehension of classical Arabic or their perception of reliability and professionalism in Classical Arabic.

> **P5**: “honestly Yes, there is a difference when the content is in classical Arabic, what I feel all people cannot understand it as much as in the colloquial (local dialect) language. I noticed that in likes and retweets in particular on Twitter because it is more widespread in health information, I feel that when it is in colloquial language, it is more acceptable.” (F, 20s, Bachelor)

> **P6**: “Most probably, if it is in classical Arabic, it would be better because some words in local dialects are difficult to understand, (…) but the classical word is probably known by everyone, if it is in classical it is very excellent and better.” (M, 20s, High School)

> **P11**: “The Arabic language, especially classical Arabic, gives the essence of craftsmanship to the person. (…) you give the one who speaks classical Arabic more prestige and reliability than when he speaks colloquially because we are in our daily life colloquially everyone speaks colloquially, but when it is medical information, you feel the degree of confidence more when it is from a person who speaks classical Arabic more or writes at least in classical Arabic.” (F, 30s, Postgraduate)

Medical terminologies: Most participants noted that they understand its usefulness for others, but they usually did not prioritise medical terminologies in Arabic or English, as long as they could understand the topic. However, some participants with high English proficiency would prefer the availability of Arabic and English terminology so they can refer to English sources easily.

> **P3**: “The name of the disease is ok to be in English, it is known and diagnosed in English, but after that it must be explained in Arabic.” (F, 30s, Postgraduate)
>
> **P5**: “Certainly, I know about that there is something if translated into Arabic would not give the same meaning. I feel that it will be more correct if this information or term is in English. is preferably in English.” (F, 20s, Bachelor)
>
> **P23**: “If there is a scientific term, that can be written in parentheses in English for people who want or need to know more.” (F, 30s, Bachelor)

Access to teleconsultation: Participants expressed interest in direct online communication with healthcare professionals who are related to the topic they are researching. The communication was suggested to be in the form of question and answers, private messaging, chatting, or scheduled voice or video consultations.

> **P6**: “If, for example, there is live consultations, I mean, you speak, for example, in audio and video with, for example, the doctor is also good.” (M, 20s, High School)

6.7.3. Responsibility

Participants suggested or sometimes blamed others (who they thought were responsible) for online health information. The responsibility was assigned to the government, the Saudi Ministry of Health, other Arab governments or Ministries of Health, hospitals, health institutes, universities, health insurance companies, doctors and other professionals.

The Saudi Ministry of Health was criticised for delays in providing valuable online health information services. Despite, a preference for reliable sources, some participants suggested others in the field could step up and take the responsibility for creating such useful health resources.

> **P5**: “The Ministry of Health is very late.” (F, 20s, Bachelor)

A participant expressed disappointment in physicians who are well-known in their specialties but fail to take responsibility for using their expertise to provide reliable information, leaving consumers with no choice but to seek information elsewhere.

> **P3**: “I want more details about your specialty because, for me, you’ll become a reference point. You’ll be my reference for this specific topic. Otherwise, I’ll have to look elsewhere in your specialty because you either don’t write or switch to English, which forces me to search in another language! (F, 30s, Postgraduate)

6.8. Summary of findings

Individual exploratory interviews with adults in Saudi Arabia further confirm the use and demand for Arabic online health information and agree with the findings of the scoping review. Consumer attitudes towards using the internet for health information presented key themes including the interpretation of health information, consumer experience with using the internet for health information, and the perception of the current state of available Arabic online health information. Participants experiences varied in terms of motivation and methods employed for seeking health information. They identified a wide range of sources online, including social media platforms, personal anecdotes, news, and health-focused websites, but expressed uncertainty regarding the reliability of the information. Furthermore, participants portrayed varying perceptions of the current state of Arabic online health information content. Participants desired a single comprehensive resource for health information, emphasising the need for trustworthiness, comprehensiveness, authority, and ease of use and navigation. Evaluation of available information online and competencies related to digital health literacy were also discussed, as well as suggestions for responsibility in providing such resources, attributing responsibility to government entities, healthcare professionals, and technology experts in the field. Overall, participants utilised various methods to judge the reliability of information found online and expressed a strong desire for a comprehensive, authoritative, and user-friendly resource for Arabic online health information.

Chapter 7. Content Creators Interview findings

7.1. Introduction

In Chapter 4, the results of the scoping review indicated that the people of Saudi Arabia found individual accounts or profiles on social media to be more valuable than those belonging to health institutes. During consumer interviews, participants who utilised social media for health information reported finding it easier and more credible than other sources on the internet. Therefore, it is important to explore the views of content creators on what consumers need and their current decision-making processes. This would help to gain insight into how to better provide Arabic online health information to people in Saudi Arabia, in particular, the wider Arabic-speaking community.

In this chapter, I am using the term content creator to refer to healthcare professionals who provide Arabic online health information content as individuals. I will describe the characteristics of the participants. Following this, I will describe how participants introduced themselves professionally, their journey so far in providing Arabic online health information, their decision-making process when creating content, what factors affect their behaviour and decisions. In addition, their perceived benefits, challenges of creating health information content in Arabic, and their perspectives on collaborative health information initiatives will also be critically assessed. Finally, I discuss the results in the context of the literature on providing health information to the public.

7.2. Participants

As described in Chapter 5, content creators were recruited through their social media channels. Twelve creators agreed to take part in the study, but only 11 content creator interviews were included (Table 2), as one content creator did not meet the criteria of being a healthcare professional, he was a researcher who had no medical experience or qualification. (See more in the reflexivity section in Chapter 5). I interviewed seven males and four females, with their work experience ranging from 3 to 40 years and their content-creating experience ranging from 3 months to 14 years. Their reach through their main social media channels included 3,500 to 320,000 followers on their main platform at time of the interview.

Table 2 Demographic data of content creator participants

ID	Gender	Age group	Years since qualified	Content creating experience	Speciality	Main platform followers
1	F	30s	13	18 months	Clinical psychology	3.5K Instagram
2	F	20s	3	3 months	Physical medicine	5K Twitter
3	M	30s	6	5 months	GP	107K Instagram
4	M	40s	10	5 years	Ophthalmology	58.6K Twitter
5	M	30s	7	5 years	Psychiatry	11.9K Twitter
6	M	30s	10	2 years	Ophthalmology	3.5K Twitter
7	F	30s	6	1 year	Clinical psychology	17.6K Twitter
8	M	40s	14	3 years	Psychiatry	21.5K Twitter
9	M	40s	20	10 years	Gastroenterology	320.2K Twitter
10	F	60s	40	11 years	Obstetrics and Gynaecology	141K Twitter
11	M	30s	13	11 years	Orthopaedics	83K Twitter

7.3. How participants introduce their professional role

During the interviews, participants were asked to introduce their professional role. Some of them then described themselves as content writers, health educators, health promoters, educators, and founders of health empowerment initiatives. However, the remaining participants did not mention their content creation activities.

> **P6**: “Well. My professional role means me as a doctor, which is, of course, to treat patients in my speciality. our treatment can be classified as medical treatment and surgical treatment, specifically in my speciality. and my role can be extended to provide patients with education and advice.” (M, Ophthalmologist, 2 years on social media)

7.4. Content Creators’ Journey of Providing Arabic Online Health Information

7.4.1. Reasons to start their journey

Participants identified several factors that triggered their journey to provide health information on social media, including natural progression, community service, self-promotion, and request from friends and family.

Participant 10 had experience writing health-related content for newspapers and appeared on radio and TV before the internet and social media. Following this, she believed that social media was the natural progression for her journey.

> **P10**: "When I was a student I used to write for newspapers, (…) I my writings were about social issues and spreading [health] awareness. Of course, when social media came, things were different for me, so I joined Twitter. (…) I loved Twitter completely; I found it a powerful tool with which I can convey all the health awareness messages. (…) Twitter gives me a space first, not an actual space, but it gives me the option to enter at any time to write what I want it in a short message, I don't have anyone waiting for the article from me to publish it, and at the same time its impact is very wonderful on a large segment, starting from decision-makers to the average person, man or woman, especially the youth, as here I started delivering information through social media." (F, OB&Gyne, 11 years on social media)

Others mentioned participating in health promotion campaigns in the hospital lobby or at the local school, and that the internet was the next step to provide health promotion material to reach a broader population.

> **P6**: “We used to communicate this information to people physically in malls and in the lobby of hospitals. Therefore, we create patient awareness campaigns. But to be honest, social media are now fantastic tools for doing all of this because of the large number of people who use them, and they are convenient for both parties, us, the physicians or service professionals, and them, the audience. this is how I began.” (M, Ophthalmologist, 2 years on social media)

Most of the participants mentioned different aspects of community service as their reason for starting to post social media content. Participants mentioned that health promotion and myth busting is integral to a physician’s role in society, especially when it is related to preventable diseases.

> **P6**: “My role extends to advising and guiding patients to help them manage their illness, or even prevent these illnesses and their side effects or complications. Our role can be expanded to include social awareness, which is what is happening now on Twitter or on social media platforms, in general.” (M, Ophthalmologist, 2 years on social media)

> **P11**: “The main reason is that there are many myths, especially here in the Arab world. (…) things that are traditional beliefs, are not scientifically proven, but people generally would do it. I mean someone comes to you like to take pomegranate peel and olive oil and all of this is WhatsApp messages. Why did I start with this thing, because people who are well trained and educated need to lead in this health awareness. so, if we say no, as a doctor I am supposed to not be afraid of social media, especially since it is now the platform from which people get news, and I said no, I am supposed to be busy in the clinic, in teaching, in operations. and social media, is a waste of time is a mistake, because in the end, most people they will get their information from WhatsApp, and all of which are misinformation. So [I am here] to correct health concepts and spread health awareness, not treatment and diagnosis.” (M, Orthopaedics, 11 years on social media)

Other participants discussed working online to counter the lack of Arabic health information content online from healthcare professionals. One participant felt it was his duty as a physician.

> **P4**: “I am on the principle that if you don’t like something, do it better. For me, at the time I started, I didn’t like all medical media, so instead of sitting and criticising it, I made [better] medical media.” (M, Ophthalmologist, 5 years on social media)

> **P3**: “I think it is our duty as Arab physicians to provide awareness and information, especially that Arabic content is very little compared to other languages. (…) So, we must have Arabic content in our language, so that our people can understand it easily. (…) I see this as our duty, and anyone who can speak, I mean, it is not necessary, everyone has a duty to do so. some people know how to speak, and others cannot speak. those who have the ability of public speaking, they have an internal duty that one must publish this information as much as he can.” (M, GP, 5 months on social media)

Participant 7 started her journey as a response to the low number of mental health professionals in Saudi Arabia and the internet provided her the space to reach and help larger numbers than she could accommodate in her practice.

> **P7**: “the ratio hurts, meaning that for every 140,000 people, there is only specialist in mental health, if I worked 24 hours, I would not work with 1% of them.” (F, Psychologist, 1 years on social media)

Self-promotion was also mentioned as another motivation. The participants were aiming to promote their presence to peers, as well as potential patients or clients and chose to post health promotion content as a way to express their presence. This presence can be translated into tangible benefits such as more patients or clients in their private practice.

> **P1**: “Why? The first reason is a very selfish reason, which is that I want to promote myself. and the second reason is that I want to communicate with colleagues, to be in formal or professional communication in the same field. and that I write, to raise awareness and educate, you can say, but this is what was number 1 for me.” (F, Psychologist, 18 months on social media)

Lastly, participants social circles were also a motivation for an online presence. The effect of social circles was either a direct request to start a social media profile or repeated requests for information. The indirect effect of social circles is how participant 7 described becoming tired of responding to the same inquiry from mothers around her. She thought that it would be easier to talk about it online and share the information with everyone.

> **P7**: “Oh, the beginning was from the circle surrounding me. I was getting many questions due to my speciality from friends and the same questions are repeated and I was tired of answering each one alone, for example, I have a (stubborn) child, I respond to my friend, then to my cousin, and then to my husband’s cousin. So, I said you know why I don’t collect these responses for all people to hear. That was the beginning. Two, I noticed that when someone dives deep in a speciality, information starts to become self-evident to them, but to others it is not self-evident. (…) Here I also had a feeling that I don't know what to call scientific responsibility, social responsibility? that how can one transfer [what they learned] to [make] people's lives easier.” (F, Psychologist, 1 years on social media)

7.4.2. Target Audience

Participants described their target audience twice: once as a response to who the target audience was and secondly when discussing which phase of consumer information need (curiosity, symptom, before diagnosis, after diagnosis, etc.) their content is most helpful for.

When asked about their target audience, participants mentioned the general public, potential patients or clients, medical students, and sometimes other healthcare professionals.

> **P4**: “I usually provide content to two categories: The first is society, of course, and they are let's say potential patients, people who can benefit from my information and benefit from my experience as a doctor in this specialised field. (…) The second category are the medical society [including] students at all levels because sometimes we talk about information related to them.” (M, Ophthalmologist, 5 years on social media)

Nonetheless, the openness of social media can be a double-edged sword when it comes to target population, it makes it difficult to control who can see the content. Some participants were surprised by unintended subcategories of audience.

> **P7**: “In the beginning, my target group was the parents, then, I was surprised that all people are listening. I mean, for example, one of my students told me that her 12-year-old brother is following your podcast, of course I was surprised Why would he listen? Is he understanding what I am saying? that wasn’t what I imagined. Then, I met my cousin, her 16-year-old son, you say that he won’t miss and an episode in the podcast. So, I was surprised in a category that never crossed my mind that listen, young people. [Also,] for example I did not imagine the elderly, a man in his 50s listens, my brothers’ grandfather-in-law, every time an episode is published, he sends it to my father and share it in groups. so, I am surprised at people who have not crossed my mind. I mean, older generations, young generations, of course I did not plan to target them, but I discovered that they are an existing group, and this is a problem of social media that you can't choose your audience or the target population and this is an advantage and a disadvantage honestly at the same time.” (F, Psychologist, 1 years on social media)

Consumers mentioned being prompted in various ways to seek information online (See section 6.5.2.1). When asked which group of people their content is most helpful to, content creators responses varied. Two participants mentioned that much of their content is helpful before any prompt because it focuses on early detection for preventable conditions. Other participants mentioned that their content is catered for people with a diagnosis or in the process of a diagnosis. A psychologist mentioned targeting people who were considering psychotherapy or consultation before a diagnosis, noting that the content rather than simply presenting straightforward information about mental health, their content delves into deeper questions and encourages critical thinking and reflection. The content is designed for an audience that already has some basic understanding of mental health concepts but seeks to deepen and expand their knowledge.

> **P1**: “Honestly, it's more philosophical than educational. There are a lot of questions, and I describe it as not providing information for people who are completely unaware of mental health. No, I am addressing a group that has some level of understanding but wants to develop it further. I provide information, but as I said, it's

> philosophical. I would describe it as more philosophical than just providing straightforward information.” (F, Psychologist, 18 months on social media)
>
> **P9**: “In fact, I thought about the answer many times. Let me say that the ones who will benefit from me the most are those after the diagnosis stage. Meaning that this person who was diagnosed with Crohn’s disease and did not find any content, what is this Crohn’s, or this woman whose husband appeared to be virus B [hepatitis B positive] in the pre-marital screening, and she doesn't know what to do, these are the people who will benefit from me the most, which is after the diagnosis, but there is always a place for general information that benefits healthy people. Information about nutrition, about exercise or just general advice and public health is always there but I am an account I think useful for people who have been through the issue.” (M, Gastroenterologist, 10 years on social media)

7.4.3. How They Describe Their Content

Participants responded differently when asked to describe their content. Some began by highlighting their use of simple language, while others emphasised the quality, truthfulness, or trustworthiness of their content. Many participants described their content as focused on their speciality or subspecialty. This includes sharing case stories from clinics, addressing misinformation or disinformation, providing guidance on managing common conditions within the field, or discussing new scientific advancements. In addition, participants mentioned posting non-scientific content, such as personal achievements and seasonal greetings.

> **P3**: “I provide medical content within the limits of my speciality. I try to simplify the information as much as possible, and I often use videos.” (M, GP, 5 months on social media)
>
> **P7**: “It is a big challenge, I mean, how can a forty-year-old mother hear me and has nothing to do with this subject for the first time she opens to hear something like this. (…) someone whose specialty is chemistry and not at all close to my specialisation. How does the

> information come down in her daily life smoothly? Different ages, different backgrounds, cultural, ethnic, religious, social, I call it a challenge, but at the same time I enjoy how to convey information with cultural sensitivity.” (F, Psychologist, 1 years on social media)

One participant described how his content evolved over the course of a decade on social media. Initially, he focused primarily on combating misinformation due to the stark contrast between the questions they received in their clinic and what he had been accustomed to while working abroad in North America. However, when he began providing longer and more detailed information, he was amazed by how starved his audience was for such content. Consequently, he shifted his content to cater specifically to his audience.

> **P9**: “In March 2012, the month of awareness of colon cancer. (…) I started writing tweets about what colon cancer is, how it develops, what the adenoids are, and how we protect ourselves from it. (…) I found a great response at that time, and I said no; these people do not only want someone to refute rumours for them. There is a lack of basic information, so I will focus on it.” (M, Gastroenterologist, 10 years on social media)

One psychotherapist described her content as more philosophical in nature.

> **P1**: “In fact, it is more philosophical than raising awareness. It has many questions. I describe it as not presenting to people who are zero in mental health; I am addressing a group that has a certain amount [of information] and they want to develop it.” (F, Psychologist, 18 months on social media)

Another participant described his content as guidance only, with no details. He described it as a metaphorical direction guide without details about the obstacles along the way.

> **P11**: “Very general message, as the journey from here to the sea is 20 minutes by car. I will not tell you which way you will go and how and what the obstacles are. Perhaps there is a hole, and it will not be exactly 20 minutes. You can take a ticket if you speed up. I don’t give details. It is an overall message. I leave it to the audience to decide

> whether they really want the information to be helpful to them or not." (M, Orthopaedics, 11 years on social media)

7.5. Decision-Making Processes of Content Creation

To provide information to the public, participants undertook a series of decisions to get their content from an idea in their head into the eyes and hands of consumers. This began with setting up their social media account, what topic to discuss, and how to prepare and present it. Content creators go through these decisions to optimise their content for credibility and subsequent engagement.

Setting up the account: The first decision participants made when starting their journey is setting up a social media account. Here, I inquired about the steps thy took to establish credibility. Some decisions were related to their profile, while other choices were related to their content.

Choices related to the profile includes mentioning their qualifications, place of work in the bio section, following and followers list (entailing number of followers). Following another healthcare professional in the same speciality, being followed by them and retweets of each other's content were mentioned as endorsements of other figures, which would promote the credibility.

Choices related to content included the style and quality of the information, simple and easy language, restricting posts to their speciality. Content creators would emphasise not posting content or data they were unsure of to ensure they were seen as legitimate to consumers.

> **P1**: "It is possible they see sentences indicating that this person understands. it is possible they see a quote from names of people in the field. (…) they will see my qualifications, or from where I got it. They can search me to confirm. for example, I don't post about energy things and absurd, improbable stories, things like that I avoided them, and I don't believe in them in the first place." (F, Psychologist, 18 months on social media)

> **P3**: "Yes, one of the things that make people follow the type of content that I provide is the style that I use. The style of my speech and the style of the video itself, The quality of the image in the video itself or

> the image. Even the tweet, the quality of the speech, that I speak in a clear language and that there are not many mistakes. Quality in general is differentiating." (M, GP, 5 months on social media)
>
> **P9**: "If we did this interview exactly a year ago, I was a person who spent more time on Twitter, maybe now I have been absent for a year, maybe I was more reliable a year ago. But I think I at least talk about myself, my focus on my specialty and not talking about other disciplines has increased the confidence of some in me." (M, Gastroenterologist, 10 years on social media)

Topic Selection: Topic selection is another decision participants take to provide high quality content to consumers. Decisions about which topics they discuss includes what their content limits are.

The selection of the topic can be planned to include topic relative to seasons, world day, or prompted by an event, an encounter, or a question. Including predefined lists of topics, trending topic on social media platforms, patient or client encounters, new publications they had read, questions from their followers, and an interesting tweet worth translating, or even whatever came to them at the moment.

> **P3**: "I try to choose it according to the season. I mean for example in the winter now we are entering the winter I presented the topic of how to prepare for the winter. this depends on the time and in some topics sometimes if I find a topic that became a trend or an event I try to talk about it. but this must be within the limits of my specialization in my field. so, this is always easy to talk about. (…) sometimes there are people who ask me for topics, and when I feel that there is a group who asked for a topic, I do it." (M, GP, 5 months on social media)

The timeliness of a certain topic was also considered by participants. Some posts can be postponed, and trending topics were prioritised.

> **P3**: "Sometimes I prepare a topic, then I feel now the time is not suitable. so, I leave it on the side. I leave it for another time. Sometimes I make a whole topic then I go back to see it, I don't like what I see whether the quality or anything I don't like in it. so, this

> makes me not post it. but it all stays this does not mean that I cancel it, it will be either fixed or I will find a suitable time for it and post it. other decisions Sometimes I prepare a topic for example, then another topic comes, more important than it. for example, in the middle of preparation of a [a topic in a] series. but important things a are happening so I stop a little and talk about other topics." (M, GP, 5 months on social media)

Content Limits: Most participants have limits on the type of information they shared publicly and can be different than what they have discussed in direct messages (to audience members). The reasons for these limits included personal image and ethics, time constraints, the potential disinterest of followers, and discouraging self-diagnosis. Participants avoided topics that were not related to their specialities, controversial or provocative topics, fear-inducing details, and information that could potentially invade patient privacy. Participants who worked in mental health mentioned ready-made solutions as an ethical limit to what they post about because each person has their own challenge and there is no one solution to treat anxiety or depression for example.

> **P1**: "It is hard to say, because I just started. I try not to get out of my specialisation. I specialise in relationships, marriage and family therapy also deals with individuals. But I don't focus on diagnoses, depression, anxiety. They are still in my specialty. But it is the specialty of other people more." (F, Psychologist, 18 months on social media)

> **P4**: "I avoid talking about anything outside my speciality. This is a basic thing, that there are specialists better than me, of course. on the contrary, this thing limits me, my content becomes little, not like when I talk about everything in medicine. This is the first thing. The second thing, as I told you, I try to stay away from topics that are controversy, topics that have more than one side or provocative." (M, Ophthalmologist, 5 years on social media)

> **P8**: "two things I do not like to talk about. the first thing, is anything related to patient's privacy. Whether the stories that I hear or pass by me, or things like this. I mean, I am very careful, I mean, it is

> impossible like this, I come to tweet and say a patient just left my clinic, and I sit down to mention his story, that never happened. The second thing, by virtue of my specialisation in developmental and behavioural disorders in children and adolescents, one of the important things, but I do not like to raise it on Twitter is the issue of sexual harassment. I don't like to delve into it and not raise it because I do not have a sub specialisation in it" (M, Psychiatrist, 3 years on social media)

Preparation and presentation: After choosing a topic, decisions related to how they prepare and present the topic is important. Decisions related to preparation include referring to references or sources, format, language and submitting the content for review. Decisions related to presentation involved posting references, platform consideration and the use of content recycling methods.

When preparing their content, some participants reported preparing their chosen topic based on their experience and knowledge without checking any references more than what they perceive that they know by heart. Alternatively, some reported referring to as many references as possible to ensure the accuracy of their content. Participants perceived social media as an informal platform where disclose of their references (with regards to the social media post) was not essential. One participant mentioned that 'the public' would not understand the legitimacy of certain references so they choose not to post them.

> **P7**: "This is another issue; some people say, 'Give us the link to the study, tell us the source.' I feel like, now, I'm not writing research that I'm going to submit in a journal or a scientific magazine to document it. That's a different system. The social media system means I fear God and am honest in my information, but when they ask me, 'Where is the source?' To pull it out from any book I read or any research, it takes a long time. And I don't have that, so this might be something negative for some people, but for me, I take social media as a somewhat informal platform. I don't feel like I'm dealing with a scientific journal that I will submit a paper to." (F, Psychologist, 1 years on social media)

> **P3**: “Frankly, I don't put it every time because the target group is the general public. The general public, if I put CDC and American Academy for Family Physicians for him, he will probably understand it, and maybe he doesn't care as much as the person himself.” (M, GP, 5 months on social media)

The way participants choose their format (written, audio, video, photo, or infographic) can be an iterative process, beginning with one format and then experimenting with others to see how consumers engage. This can also depend on the platform used, showing how social media engagement metrics can shape how the content changes with time and might divert from the original purpose of health promotion.

> **P4**: “As you know you have two minutes and twenty seconds for the video to be put in twitter, so the limit is always two minutes and twenty seconds I try the topic I am talking about not to exceed this period of it so that a lot of talk does not happen and some of it because the information is focused and I can use it in more than one platform so almost this is what happens Sometimes I write at least the bullet points I will talk about what and so if it was originally a short video then most likely it will be three parts Introduction to a question what is the thing after that I explain simple things about him how and how and then talk about the solution or the problem that has become and how to solve it.” (M, Ophthalmologist, 5 years on social media)

Videos facilitate audience recognition of the content creators’ identity on various platforms. Arguably, the approach of some of the content creators could be seen as marketing, demonstrated by one participant referring to his audience as customers

> **P4**: “I say every content has its customers. (…) I started to see that it [videos] is easier for me to record and has more impact on the listener. People see me when I write the tweet, and they see my picture. Which is okay. but when it is a video, while I was talking and explaining, they see me and my face is rooted in their brain. They get

> an impression and know me after that, even if they see me anywhere, Oh Dr. so and so" (M, Ophthalmologist, 5 years on social media)

Podcasts on the other hand, make it easier to discuss an issue in length.

> **P7**: "Then I found people do not like to read as much as they like to hear so I started the podcast So if you ask me what platform I rely on the most is the podcast because it gives me a platform to give the information its right and I feel my conscience relaxes that it was explained well. Of course, we are unfortunately living In the middle of a society that wants everything quick digested fast so we have to for example download clips on Instagram or on Twitter or so this is just to grab their attention to the main source. Honestly which is the podcast is what I consider it like an audio library, of course there are also people who like to watch what they hear so they made it on YouTube, the blog I wish I had a longer time I started writing in it but I am not very active in it I mean for example every two months I can post an article or every 3 months." (F, Psychologist, 1 years on social media)

One participant preferred written content on picture slides on Instagram for her content to control the order in which consumers would read her content.

> **P1**: "One of the reasons is that Instagram is a photo gallery not a blog. Even when you put text under the photo, when it is in Arabic it is not tidy. and people in social media want to pass on it fast (…) and not necessarily gradually like I want in the pictures." (F, Psychologist, 18 months on social media)

Participants' choice of which form of Arabic they delivered their content depended on multiple factors. Most participants preferred using simple form of classic Arabic, so that the content was understandable for larger audience groups. However, some participants found the usage of their local dialect made them appear more approachable to their audience.

> **P6**: "The simple classical Arabic language, not the complex classical Arabic, is understandable to everyone. A colloquial language I can speak, is easy for a group of people in a certain area and difficult for

> another specific area. therefore, classical Arabic will be the solution for me." (M, Ophthalmologist, 2 years on social media)
>
> **P4**: "Of course, frankly, the best is to speak classical Arabic. but I tried in the videos to talk as naturally as possible. When someone is presenting himself naturally, he will be approachable. (…) I mean the exact same way that I speak in my videos, is the one I use in the clinic when I talk to a patient because if I speak in classical Arabic, I feel that speech will become heavy on me, and I am not able to express what I want easily but when I speak my natural colloquial language which is the Hijazi language, maybe there are words that you don't understand and some feel it for sure strange but I feel the opposite, this way people feel that the doctor is talking to me." (M, Ophthalmologist, 5 years on social media)

In order to ensure that their content was understandable, two participants sent their prepared future content drafts to reviewers. One participant sent his drafts to other healthcare professionals of the same speciality to review their content.

> **P2**: "when I first started putting medical information, I was consulting one of the doctors in the same specialty as me older than me. He says how is that he tells me no take this word put this word maybe this word can confuse them this word can understand it more. After a while I started to know what I am putting and what is they want to hear him" (F, Physical medicine, 3 months on social media)

Another participant selected individuals whose thinking or critique she liked. She argued that because they belonged to a different demographic, she could assess how posts would be received by people with different levels of literacy. She also emphasised that she rarely checks with other colleagues in her profession, when in doubt or in need of a second opinion.

> **P1**: "Mostly, they are friends or family, either I like their thinking or criticism, or that each of them represents a category of people, making sure that the very well-educated understood me, and those who are not very well-educated understood me, like this. Sometimes I refer to specialists when I have a doubt or so by making sure that

> the information is correct. but it is not the original or the habit I have." (F, Psychologist, 18 months on social media)

After preparing their content, participants tend to consider two aspects of presentation: choosing a platform and sometimes content recycling.

The way participants choose the platform for their content can be influenced by the type of content they want to share and the audience they want to reach. One participant chose Instagram because of its focus on images and perceived client base. After trying multiple platforms, another participant believed that Twitter is the platform for health education in Saudi Arabia because of its factual nature.

> **P1**: "Twitter is a larger space and you reach more and colleagues in it are more, but I took a little position from it, I had an issue once so I avoided it a little bit, and on the other hand, Instagram was a quieter space in which pictures and people love pictures, and I felt that Twitter is the place of specialists and Instagram is the place of people The clients are more, so I initially wanted clients I started with it because the pictures." (F, Psychologist, 18 months on social media)
>
> **P9**: "Twitter has always been the best and most distinguished platform for me, even after 10 years of this experience. I tried YouTube, Snapchat, Instagram—I tried them all. I still have channels on them, but there's no debate that from the moment I started on Twitter until now, I am completely convinced that the best platform, at least for the Saudi community, for health education—let's say for those whose goal is not fame but genuinely health education—is Twitter, without debate." (M, Gastroenterologist, 10 years on social media)

Content recycling was mentioned in the interviews as a way to present existing posts in a new way. For example, creators will record a video of the same Twitter thread they posted four months ago.

> **P4**: "I mean, in a term they use in the content industry, which they call content recycling, I don't know if it is against you or not. The idea of it can be one piece of information, for example, but it is exposed in such a way, it is possible to display it in the form of a tweet next time I

> present it in the form of an image that I comment on next time, I work on it in a video and talk about it, so this is a possible way with the same information, I present it this way" (M, Ophthalmologist, 5 years on social media)

Accessibility considerations:

Although consumers can have different needs and accessibility levels, accessibility was not mentioned as a consideration in creating content or additional media.

7.6. Factors Affecting Content Creators' Decisions

The preceding section (Section 7.5) outlined various decisions that participants made during their content-creation journey. These decisions were influenced by one or more of three factors. These included creators' perception of themselves, perception of audience's needs and preferences and social media metrics. For example, timing and content recycling decisions were based on social media engagement metrics. Other choices, such as the limits and content of the presentation and the references used, can reflect the participants' perception of themselves and how they wish to portray themselves. Additionally, some decisions consider both aspects, such as participants' opinions about edutainment (a term used to combine education and entertainment).

Creator's perception of themselves was mentioned in the way participants viewed trust, impacted by how they perceive themselves and their audience. For some participants, respect and trust was earned over time (since they started creating content on social media). Others viewed trust as an inherent quality in doctors, which they strive to maintain.

> **P1**: "I seek that they respect me. trust comes with time." (F, Psychologist, 18 months on social media)
>
> **P8**: "credibility is important of course. because people, to be honest, from the beginning they believe you as a doctor. and this is a big responsibility. I mean other people on Twitter, who are not doctor, may need time for people to start trusting them. We basically have the

> patient confident, and this is a big responsibility, so you do not want to lose trust.” (M, Psychiatrist, 3 years on social media)

Although the idea of edutainment was generally well received by consumers in their interviews, some content creators were unhappy with the move towards emphasising engagement and entertainment over informative content.

While engagement metrics on social media such as comments, views, watch time, follower growth can serve as helpful guides, they can be portrayed as a double-edged sword. Some participants felt that focusing too much on engagement metrics could sometimes lead to confusion and compromise the depth and quality of the information provided.

Participant 9, who had been using social media for 10 years, decided to take a break and reflect on his experience when the emphasis shifted to engagement metrics. This was because following trends and metrics were not in line with his original motivation (perception of self + metrics). Meanwhile, Participant 3, who was a newcomer to the social media platform, shortened his content to appeal to shorter attention spans to increase user engagement. Consumers felt this limited their ability to provide comprehensive information and felt the need to compress their messages to fit within consumers’ short attention span (perception of audience + social media metrics).

Other participants acknowledged the difficulty of accommodating different audiences. They realised that posting detailed or specialised content publicly may only be relevant for fewer people, while others might deem it unimportant and decide not to follow their content. This conundrum led them to contemplate the balance between providing comprehensive information and keeping a wide audience engaged.

> **P9**: “The number of doctors who provide [information] has changed, there are more doctors than patients, there are hundreds and thousands of doctors who provide health awareness on various topics. People's passion for receiving information is less than it was for cold information, and they have a passion for receiving spiced up content. Of course, this is how it is always in the media in general. Things full of action and spices succeed more. If I wrote about

beetroot, my tweet would get more retweet. but now because of the presence of videos even on Twitter. instead of what was 140 concentrated characters, it became 280, the philosophy became longer and society [that engage with cold information previously] became smaller and [majority] wanted faster [information].” (M, Gastroenterologist, 10 years on social media)

P3: “At the start of my journey—it’s still recent, but in the very beginning—I used to share more detailed and in-depth information. I wanted to convey as much as possible. But I started to notice that some people didn’t fully understand, or the level of acceptance wasn’t very high. So, I began simplifying the information to make it accessible to a wider audience. That’s what I’ve been doing recently: trying to simplify the information as much as possible while also being comprehensive. I try to cover topics from multiple angles; I don’t like addressing a subject from just one perspective. I try to be as thorough as I can. Of course, it’s very challenging to cover a topic in just 30 seconds or a minute—that’s one of the major difficulties. How can I summarize a topic in half a minute or a minute? So, I aim to simplify the information and focus on covering the most important aspects.

R: When you’re limited to a minute or half a minute, have you tried making two videos for one topic instead of condensing it into such a short timeframe? Or why do you choose to condense it into a minute or less? What’s the reason behind this?

P: Good question. I published most of my videos on TikTok and Instagram—these are the two platforms I’ve used the most. When I first started, these platforms had a 30-second limit for videos, then they increased it to a minute, and now they allow longer videos. However, when you upload a video, they remind you that people prefer shorter content. I can also see the video statistics; most people don’t finish watching, even when the video is only 30 seconds or 15 seconds long. People really want quick content—they don’t want anything lengthy.” (M, GP, 5 months on social media)

7.7. Perceived Benefits and Challenges of Content Creation on Social Media Platforms

Participants journey of content creation on social media was rewarding and challenging. They appreciated the recognition from peers and positive messages about the impact on people’s lives. The challenges were related to lack of resources, misinformation, governance and confidence.

7.7.1. Perceived Benefits

Content creators on social media platforms experience several benefits including positive impact, reputation building, professional recognition, and skills development.

7.7.1.1. Positive impact:

Positive messages from followers acknowledging the creators' impact on saving lives, preventing complications, or enabling early detection of conditions were regarded as the highest reward.

> **P6**: “By God, I benefited from the experience, the first thing is that there are really people who need reliable medical content on the Internet because it is a bad alternative What is the alternative in Google? Google is a revolution in the human world, but it is very a dangerous search anything I mean, he searches, he will find information first, some of it is wrong, some of it is correct, he will find conflicting information, he will sometimes find popular recipes, he will sometimes find treatments, and he will start getting treatment from the pharmacy and use it, and this is part of the problem” (M, Ophthalmologist, 2 years on social media)

7.7.1.2. Reputation Building:

Building a good reputation as a trusted source of health information can lead to direct and indirect monetary benefits. Participants mentioned sponsorships, private patient or client referrals, and job offers as rewards for establishing a strong reputation.

> **P11**: “It gives you a larger audience I mean for example my experience that my patients are many not only from Jeddah outside the Kingdom and the Emirates and Kuwait but by social media effect This was surprising actually, in my practice In the US they used to come from Saudi Arabia to see me at the clinic in New York so how you can reach places it is impossible that you deliver it but in Marketing the right of the hospital or any advertisement or simple scientific news This is powerful tool” (M, Orthopaedics, 11 years on social media)

7.7.1.3. Professional Recognition

Almost all participants mentioned the expansion of their professional networks as a significant benefit. Through their online presence, they were able to connect with healthcare professionals, researchers, and industry professionals, leading to collaboration with other opportunities and knowledge sharing.

> **P1**: “my name began to be known within my colleagues of the profession.” (F, Psychologist, 18 months on social media)

The visibility and credibility gained through content creation on social media can lead to recognition within professional circles. This recognition can open doors to speaking engagements, conference invitations, and other professional opportunities.

> **P4**: “But I see the very big and very big benefit in the media that I appeared in honestly it opened doors and relationships for me that I never dreamed of with other people in the far east and west I knew them fellow doctors in different specialties some of them before me some after me” (M, Ophthalmologist, 5 years on social media)

7.7.1.4. Skills Development:

Content creation helped participants improve their writing skills, as they effectively communicate complex medical information in a concise and understandable manner.

> **P1**: “Personally, I benefited from developing my writing skill, and this thing was a long-time goal for myself” (F, Psychologist, 18 months on social media)

7.7.2. Perceived Challenges

Perceived challenges related to content creation included: resources, misinformation, governance, and confidence in discussing controversial topics.

7.7.2.1. Lack of resources:

Time constraints, human resources and equipment such as studios, cameras were mentioned as challenges related to lack of resources. Human resources such as translators and editors can help with time constraints between their clinical jobs and content creation.

Time and Translation: Time constraints and the need for accurate translation of health information into Arabic were identified as significant challenges. Creators emphasised the importance of providing high-quality translations that are clear and culturally appropriate, which requires bilingual proficiency and careful consideration of language nuances.

> **P1**: "Translation in particular. There are words in our field that is hard to translate accurately. Which makes people understand it differently. So how can I make my content close to the person without feeling that it is a translated book or a translated movie. (…) I feel the solution is two-sided. The personal side is I have to have a strong hold of Arabic language. So I can choose stronger words that express my idea to the reader. The other thing is that collaborative approval of translation for certain terminologies." (F, Psychologist, 18 months on social media)

Human Resources: Many creators expressed challenges in managing their workload due to the lack of human resources. The demand for high-quality content, including preparation, production, recording, editing, and engaging with followers can be overwhelming for a single individual. Some creators mentioned the need for support staff or team members to effectively handle these tasks.

> **P7**: "This is what I am doing, I have a proofreader, and I have one, for example, who works for us the editing that cuts the clips and settles them" 7 (F, Psychologist, 1 years on social media)

7.7.2.2. Mis/disinformation due to impersonation, imposters, and fraudsters:

Creators expressed concerns over unlicensed individuals providing misinformation on social media platforms. They highlighted the need for regulatory measures to address this issue and prevent the spread of false or harmful information. Participants also mentioned the challenge of dealing with accounts that impersonate their identities, leading to confusion and potential damage to their reputation.

> **P6**: “I had some impersonation attempts to impersonate me (….) what do they want to benefit? I swear I don't know. I mean, would they give people wrong information that leads to blindness, for example, I don't know, there is no clear reason. (…) Or they ask for money or ask for something.” (M, Ophthalmologist, 2 years on social media)

7.7.2.3. Reporting and Governance:

Content creators face challenges in reporting imposters or profiles that promote fake or harmful content or products. They expressed difficulties in navigating the reporting process or contacting the appropriate authorities to take action against such accounts. The lack of a clear reporting method or effective governance mechanisms poses challenges in ensuring the integrity and safety of online health information, particularly concerning content creators in the field of health information

> **P7**: “The first thing is to sift specialists from non-specialists. We are still without screening. This is something. There is the Specialties Authority, but It just gives the license. but who punishes and who sues this coach, who is doing psychological trauma treatment. (…) but we don't have the judicial authority” (F, Psychologist, 1 years on social media)

7.7.2.4. Confidence in Addressing Controversial Topics:

Some creators mentioned the hesitancy in discussing controversial topics because of their new status or fear of backlash. They expressed the desire to gain more confidence and experience before expressing their opinions on sensitive subjects.

> **P1**: “to put forward my real opinion on the subject, there may be challenges. my voice not strong enough that I could say: your words are non-sense, this is my opinion.” (F, Psychologist, 18 months on social media)

7.8. Content Creators' Perspectives on Collaborative Health Information Initiatives

When I told participants that consumers desire for a comprehensive source to serve as a reference, I asked about their willingness to take part in a large-scale project. Most of the content creators were enthusiastic about the concept and its importance. However, they also raised some doubts. One participant described the idea as an unattainable dream. They also mentioned some requirements and concerns for them to join such a venture. Various types of support and resources were mentioned as reasons for them to join. On the other hand, concerns about credit and associations were also raised by some.

> **P7**: “but you gather all in one platform, I think this is impossible. (…) I found you see this is not an individual effort this is a governmental effort. this is a job of governments” (F, Psychologist, 1 years on social media)

Support and Resources: Participants expressed the need for support and resources from the organisation or initiative behind the project. They mentioned specific requirements including access to recording equipment, editors, translators, and technical support. They acknowledged the importance of their clinical experience alongside medical knowledge but recognised the value of support from technical experts. These experts, although not health professionals, are important to help shape the content to be more accessible and engaging for laypeople.

> **P11**: “You need manpower—you need people. You need a preparation team to organize and plan the topics for you to edit later, because you don't have the time to do everything yourself”. (M, Orthopaedics, 11 years on social media)

> **P11**: “sometimes the important thing is that the person who helps you is not a doctor. because his questions are important to the target audience” (M, Orthopaedics, 11 years on social media)

> **P9**: “It needs a specialist in health education. let us say that he writes tweets, and we give him information, or even we write tweets, and he revises them, at least. the problem of medical information is that he must be a doctor to understand it. not just any marketing company that can manage the account.” (M, Gastroenterologist, 10 years on social media)

Credit and Recognition: One participant mentioned the importance of clarifying how credit could be attributed to the creators involved in the project. They wanted to ensure that their contributions were acknowledged appropriately and not buried.

> **P4**: “This honesty is a very widespread thing when efforts are united, as they say, and it becomes one project all under one umbrella. In the end the person or me for example I will ask myself ok what will I benefit from this thing.” (M, Ophthalmologist, 5 years on social media)

Consideration of associations: While participants welcomed the idea of collaboration, they also emphasised the need for transparency and clarity regarding who they would be associated with. This was to ensure that their involvement aligned with their own principles and values.

> **P10**: “The first thing I would like to know is who is the party that supervises this educational platform. (…), this is very important. so that you are in a place worthy of your credibility and so on. and of course, who are the colleagues who work [there] for example I know that someone who talks about things outside their specialty and is famous and you are there. I have a reservation if he puts an article where I am writing too. I don't like to get into this maze This is also out of credibility” (F, OB&Gyne, 11 years on social media)

> **P11**: “The most important thing is reliability. I mean it is a reliable website. For example, if a government or an institute came to me and said we need you to participate with us, definitely I will do it. because

> it is educational. But if a group of people came to me (…) there is no reliability I don't know What is their background. you want to be protected when you will participate with them. but who are these people who are they actually.” (M, Orthopaedics, 11 years on social media)

Changes to the current decisions: When asked about how joining a group would change their current decision-making process, participants had very different opinions. Some participants anticipated no change, while others were hopeful.

> **P3**: “Nothing will change because when I come to talk about a topic that I completely read, I am already ready to talk about the whole topic and I can talk for 10 minutes instead of one, and vice versa. it is easier for me to say everything instead of what I summarise. on the contrary, it is easy and better that I present the topic complete and long with a good reference.” (M, GP, 5 months on social media)

7.9. Summary of findings

Individual interviews with Arabic online health information content creators highlighted the significance of the lived experience in the medical field, in addition to medical knowledge, for creating engaging content. Participants reasons for starting their content creation journey included community service, request from friends and family, self-promotion, and countering the lack of Arabic health information online. They described their target audience as the general public, potential patients, medical students, and health professionals. Content ranged from simple language to specialised information, with some focusing on psychological aspects. The decision-making process included setting up social media accounts, selecting relevant topics, preparing and presenting content, reflecting creators' perceptions of themselves, audience needs and preferences, and social media metrics. Benefits included a positive impact, reputation building, professional recognition, and skills development. However, creators faced challenges including a lack of resources, misinformation, governance, and confidence in discussing controversial topics. The creators were enthusiastic about collaborations on a bigger platform but expressed concerns about support and resources, credit and recognition, and associations.

Chapter 8. Discussion

8.1. Introduction

This thesis investigates the use of the internet for health information by consumers in Saudi Arabia. Initially, a scoping review of the available literature was conducted. This was followed by interviews with consumers and healthcare professional content creators in the KSA. This thesis aimed to identify key elements for creating and providing Arabic online health information to the public in Saudi Arabia.

In this chapter, I will summarise the main findings, present my reflections and the strength and limitations of this research. Additionally, the findings of this study will be compared with existing literature, the implications of these findings on consumers, content creators, and policymakers. Finally, this chapter will delve into future avenues for the current research.

8.2. Thesis main findings

8.2.1. Scoping review

A total of 84 studies were included in the scoping review. Among them, only five were published in Arabic. Most of the studies were published in scientific journals, with two being academic theses, one being a preprint, and one a conference paper. Of note, only one study employed mixed methods (for data collection), while the other studies utilised quantitative methods. The quality of the included studies was assessed using the QualSyst tool, revealing an average score of 84% ± 11%, with 65.5% of studies scoring above 80%. However, weaknesses were noted in controlling for confounding and sample size adequacy, with many studies showing unclear methodologies and poorly defined measurement tools.

The included studies were categorised into two main focuses, the first as those assessing participants' knowledge on a health-related subject and their source of information (including the internet). Other studies focused on the general use of the internet by the public for health information or on a specific subject. Some overlap between the two categories was evidenced and will be discussed further in this chapter.

The weighted pooled average showed that 22% of participants used the internet as a source of health information, while 21% relied on social media. Additionally, 19% preferred the internet as their primary source of health information.

The second category of results was analysed into four main themes adopted from a previous systematic review(146):

i. Characteristics of people who searched the internet for health information

Younger individuals, females, those with higher education and income, and those living with chronic diseases were more likely to use online health information.

ii. Frequency of internet search

The frequency of internet use for health information varied among studies, with an average of twice per month.

iii. Type of information sought

Most participants reported using Arabic as their primary language but limited English language proficiency was mentioned as a barrier to access more information online.

The most frequently used social media platforms for health information included YouTube, WhatsApp, Snapchat, and Twitter, with Google as the most frequently used search engine. Participants commonly relied on personal accounts of physicians, healthcare professionals and governmental health institutions for health information.

iv. Perception of consumers who used the internet for health information.

Participants generally found health information to be unreliable or had difficulty judging its reliability. However, satisfaction and usefulness of the information found online was usually regarded positively. Factors affecting the evaluation of health information online included website design, affiliation by known health institutions, updated health information and ease of use.

8.2.2. Consumer interviews

Consumer interview findings can be described into three main categories: attitude towards online health information, factors influencing these attitudes, and their desired state of Arabic online information.

1. Consumer attitudes towards online health information

Participants' interpretations of health information revealed two key categories: information about healthy lifestyle such as diet and exercise, and information about medical conditions. Younger participants often associated health information with content on healthy diet and physical exercise, influencing their perceptions of current content in Arabic.

During the study, participants shared unique stories of their experiences using the internet for health information. Motivations for using the internet included searches based on symptoms, diagnoses, and interventions for themselves or family members. Google was the most used search engine, followed by YouTube and social media platforms for health information.

Participants expressed varying perceptions of the current state of Arabic online health information. While some were satisfied with the information available, others expressed a lack of trust and identified challenging areas (limited information on rare medical conditions).

Participants' views on the use of social media for health information varied, with some acknowledging its potential for myth busting and educational purposes, while others expressed concern about the quality and reliability of information available on these platforms.

2. Factors influencing consumer attitude.

Participants used various methods to evaluate the reliability of the online health information. The interviews revealed multiple strategies such as checking bios, original source and cross referencing used by participants with no consensus.

Participants perceived that their ability to judge available information online made them reliable sources for others, particularly those who may not have the same level of skill or knowledge in navigating and evaluating online health information.

Additionally, some participants acted as surrogates for family members or elderly relatives, who may not have access to the internet or have limited English language proficiency.

3. Desired state of Arabic online information

Participants expressed a need for a comprehensive, authoritative, and user-friendly single resource for health information in Arabic, with criteria for trustworthiness including comprehensiveness, author authority, impartiality, and recommendations from trusted healthcare professionals. They also highlighted the importance of search functionality, information level between detailed and summarised content, multiple formats for available content (video, text, photos, language forms, medical terminologies, and access to teleconsultation). The responsibility for creating such a resource was attributed to various entities, including the government, healthcare organisations, and individual professionals in the healthcare remit.

8.2.3. Content creator interviews

Content creators' findings can be described in five main categories: their journeys of providing online health information in Arabic, their decision-making process for content creations, factors affecting their decisions, their perceived benefits and challenges in their journey, and views of a collaborative platform.

1. **Content Creators' Journeys of Providing Online Health Information in Arabic**

Participants cited a variety of factors that motivated them to start providing health information online, including natural progression from traditional media, community service, self-promotion, and requests from friends and family. One participant, who had previously written health-related content for traditional media, viewed social media as a natural evolution of their work. Others viewed it as a way to expand their health promotion efforts to a wider audience. Community service and the lack of Arabic health information online also played a key role in motivating participants. One participant specifically mentioned the lack of mental health professionals in Saudi Arabia as a catalyst for her online presence. Additionally, self-promotion and the influence of social circles were also identified as motivations for starting their online health information journey.

Participants mentioned a diverse range of target audiences, including the public, potential patients or clients, medical students, and other healthcare professionals. They also discussed which phase of consumer information needs their content catered for, from early detection for preventable conditions to providing guidance for individuals with a diagnosis or prior to a diagnosis. For example, one participant, a psychologist, focused on targeting individuals considering psychotherapy prior to receiving a diagnosis.

Content creators described their content in various ways, highlighting their use of simple language, quality, truthfulness, trustworthiness, and focus on their specialty or subspecialty. This included sharing case stories, addressing misinformation, providing guidance on managing common conditions, discussing new scientific advancements, and posting non-scientific content such as personal achievements and seasonal greetings.

2. Decision-Making Processes of Content Creation

Participants discussed the decisions they made during the content creation process, from setting up their social media accounts to selecting topics and presentation methods. They emphasised the importance of credibility and engagement in their decision-making. This included choices related to their profile, content style and quality, topic selection and content limits.

Participants' decisions to make their content more trustworthy included mentioning their qualifications and place of work in their profile bio, following and being followed by other healthcare professionals, as well as endorsing each other's content.

They selected topics based on planned themes, patient or client encounters, new publications, questions from followers, and translating interesting tweets.

Many participants reported setting limits on the type of information they shared publicly, addressing personal image, ethics, time constraints, disinterest of followers, and discouraging self-diagnosis.

While accessibility was not explicitly mentioned as a reason for content creation, participants discussed the importance of providing high-quality, culturally appropriate translations as well as the challenges of time constraints and the demand for high-quality content.

3. Factors Impacting Content Creators’ Decisions

Participants described how their decisions were influenced by their self-perception, the audience's needs and preferences, and social media metrics. They noted the impact of trust, edutainment, and balancing comprehensive information with a wide audience engagement.

4. Perceived Benefits and Challenges of Content Creation on Social Media Platforms

Content creators identified several benefits of creating content on social media, including positive impact, reputation building, professional recognition, and skills development. They also highlighted perceived challenges related to a lack of resources, misinformation, governance, and confidence in discussing controversial topics.

The interviewees underscored the value of their own experiences in shaping compelling and informative content alongside medical expertise and education in developing engaging material.

5. Content Creators’ Views of A collaborative platform

Participants expressed enthusiasm for the concept of a comprehensive source for health information but raised concerns about support and resources, credit and recognition, and consideration of associations with the platform and or other content creators.

Overall, the study highlighted the motivations, target audience, content descriptions, decision-making processes, and perceived benefits and challenges of content creation on social media platforms among Arabic-speaking health information professionals.

8.3. Methodological Strengths and Limitations

The findings I reported in this thesis are based on the data collected throughout the research process and my analysis and interpretation of the data. In this section, I highlight the key strengths and limitations of the data.

8.3.1. Study design

Qualitative and person-centred approach

The scoping review demonstrated the vast literature published on the use of the internet for health information. However, it also revealed the lack of qualitative exploration regarding what consumers seek when using the internet for health information. This thesis explored consumers' needs and preferences and highlighted key aspects not evident in the scoping review. This included the need for more detailed and longer health related content. The research also found that consumers often struggled to find health information in Arabic.

Content creators' perspective

The field of content creation online is evolving, and multiple healthcare professionals are utilising this platform. However, according to my research this thesis is one of only two studies exploring healthcare professional content creators' experiences. Notably, the other study in this research area, interviewed healthcare professional content creators who are creating content in Arabic. Atef et al. (42) explored their experience from media and communication perspective, whereas this thesis adopts a public health and consumer health informatics approach.

8.3.2. Sample and recruitment

Using social media for recruitment

Social media was utilised for participant recruitment, enabling this research to reach a wider geographical area and overcome cultural gender segregation. This approach enabled me to access a diverse group of active internet users, thus enhancing the representativeness and inclusivity of my research sample.

Data collection sample

While the small samples of both groups interviewed limit the generalisability of findings across all health specialities and age groups, the similarities between participants can provide guidance for further exploration The study had a low representation from the older population (over 50 years old).

This thesis aimed to build an understanding of consumer and creators experiences without focusing on particular health conditions or consumer groups. Utilising a wide range of consumers can make it challenging to generalise their experiences to specific types of patients.

8.3.3. Trustworthiness and rigor

Lincoln and Guba (1985) proposed four criteria to assess qualitative methods for trustworthiness: credibility, transferability, dependability and confirmability(252, 253).

Credibility: credibility is defined by how confident a researcher is about the findings and how genuine their data is. In this research, to ensure research credibility, the study methods, data, coding, and theme generation were peer-reviewed by my supervisors and colleagues.

Transferability: this is the degree to which the results of qualitative research can be applied to other contexts and respondents. This thesis provided a rich and extensive description of the methodology and context, enabling others to compare my work to other contexts. The findings may also be applicable to other Arabic speaking countries.

Dependability- According to Bitsch (2005)(254), dependability is "the stability of findings over time". I employed the code-recode strategy to improve the dependability of my findings. The code-recode strategy occurs when the researcher codes the same data twice with time intervals to check for consistency between them. Peer examination also aided in improving the dependability by discussing the research process and findings with fellow PhD students (who were neutral and had experience with qualitative research).

Confirmability- According to Tobin and Begley (2004)(255), confirmability is "concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination but are clearly derived from the data". To establish confirmability, I journaled during the data collection period, documenting my thoughts and reflections throughout the research process. This was discussed with my supervisors to guide and improve my interview skills. In addition, I discussed with my supervisors how to improve my interview skills. My background and reflection on the data collection and analysis were also examined critically in Chapter 5.

8.4. Key findings contributing to literature

By combining the findings from both the review and interviews, I identified three key themes that will be the focus of this section. I chose these themes based on their potential impact on the delivery of online health information in Arabic and their implications for policy and future research.

8.4.1. The Interaction Between Consumers and Content Creators in the Arabic Online Health Information Ecosystem

The findings of this thesis suggest that the interaction between consumers and content creators can be conceptualised as a cyclical relationship. This cycle is characterised by consumers' presence on social media platforms, which incentivises content creators to produce and distribute content on these platforms. In turn, the content created attracts more consumers, reinforcing the cycle. However, while this dynamic is currently effective, it presents challenges that must be addressed to better serve the needs of consumers seeking Arabic online health information.

A significant challenge arises from the tension between consumers and content creators due to the discrepancy between social media metrics and the preferences and needs of most consumers. Social media metrics are useful indicators for passive consumption of health information, driven by algorithms, whereas active consumption, which is what most consumers seek, is not reflected positively in the metrics data. This distinction can be understood through the lens of "hot" and "cold" information or live versus on-demand content. The demand for "cold" information (on-demand, evergreen content) does not negate the necessity for "hot" information (live, timely content); both types fulfil different consumer needs and are essential for a comprehensive information strategy.

The social media metrics paradox

Social media has become a powerful tool for both companies and individuals to promote their brands(256). The effectiveness of these promotional efforts is often measured by analysing content strategy performance metrics and engagement levels on social media platforms(257). This approach works well for those focused on promotion. However, the content creators in this research portrayed different goals. While some content creators used social media to boost their personal or professional profiles, others aimed to utilise these platforms for health education and promotion.

For those focusing on health education, social media provided a platform to share valuable information and engage with a wider audience. However, relying on engagement metrics to measure success can sometimes be misleading. These metrics might distract from the primary goal of health education or suggest that social media is not the most effective platform for this purpose. For instance, high engagement numbers might reflect popular content that doesn’t necessarily align with the educational objectives. Conversely, lower engagement might discourage creators, even if their content is valuable and informative.

The need for a credible source of health information

Research on health information disseminated through social media platforms primarily examines its effectiveness in reaching audiences and the potential risks associated with the spread of misinformation(258–260). These studies typically highlight both the positive impacts of accessible health information and the dangers posed by inaccurate or misleading content. However, for Arabic online health information content creators, the direct application of these findings can be problematic. This difficulty arises from the critical absence of a trustworthy, centralised reference source, akin to the NHS website or other established health guidelines, available in the Arabic language or on a specific Arabic healthcare platform.

Without authoritative sources to consult, consumers have limited options for verifying the accuracy of the health information they encounter online. Consequently, content creators face the dual burden of not only producing engaging and accessible content but also ensuring that the information they provide is accurate and trustworthy without a dependable framework to guide them.

Addressing the absence of such references is imperative before delving into the broader implications of social media in the realm of health information. For example, social media’s role as a tool for peer support has proven to have positive impacts in encouragement, motivation, and social, emotional, esteem support for those involved(60, 258). For such impact, the availability of accurate and trustworthy health information is vital, as members rely on these groups for guidance, advice, and support. Without access to dependable content, these groups can be compromised, leading to the potential dissemination of harmful misinformation(261), as described by consumer participants.

This key finding in sheds light on a critical gap in the current online health information landscape in Saudi Arabia. The lack of a reliable and authoritative framework makes it challenging for both consumers and content creators to navigate this environment.

Addressing Health Information Dissemination in Saudi Arabia

In the context of Saudi Arabia's Vision 2030 initiative, there is a significant focus on modernisation and development across various sectors, including healthcare and digital infrastructure(135). This agenda makes it an opportune moment to address the dissemination of health information on social media(135). Vision 2030 also aims to improve health literacy, aligning with the need for accurate and trustworthy sources. The current investment climate in Saudi Arabia is favourable for developing digital health platforms(262, 263). Leveraging this environment can help establish robust Arabic-language health resources at this crucial time.

8.4.2. Building Trustworthy Online Health Information Resources

This theme examines the criteria necessary to establish a trustworthy online health information resource, with a particular focus on Arabic-speaking populations. The discussion draws on recent studies and participant interviews to outline the essential components of credibility, content quality, accessibility, and ethical considerations.

Developing a comprehensive health information resource requires a combined effort from translators, healthcare professionals, and technology experts. Such a resource should be authoritative, impartial, and recommended by trusted healthcare professionals. Participants expressed a desire for a one-stop-shop for health information that meets these criteria.

8.4.2.1. Criteria for Trustworthy Online Health Information

Credibility and Authority

Credibility is paramount in online health information(264). Participants in the study emphasised the importance of information provided by qualified healthcare professionals, who preferably mention their qualifications and place of work. Alternatively, authority of the owner such as a ministry or well-known health institution would enhance credibility. Endorsements from trusted healthcare professionals further enhance credibility. These credibility criteria from participants align with findings from a previous qualitative study done in Australia(265).

While a recent systematic review(44) outlined similar and additional quality and credibility criteria, this research contributes to the literature by demonstrating that the needs of consumers in Saudi Arabia are similar to those in other regions. However, this study uniquely provides an in-depth explanation of the effect of the type of Arabic language used, a factor not mentioned elsewhere.

Content Quality and Accuracy

High-quality content should be based on up-to-date, evidence-based research(44). A meta-analysis of attempts to correct misinformation highlighted that corrective messages significantly influence belief in misinformation, especially in the health context(266). Rebuttals and appeals to coherence were found to be more effective than mere fact-checking(266). Corrective messages that combine retractions with alternative explanations (i.e., coherence) prove to be effective strategies for debunking health-related falsehoods. For example, if someone believes that vaccines cause autism, simply presenting scientific facts may not be enough. A successful correction would also provide a coherent explanation of how and why this false rumour began. When people are exposed to a coherent message explaining the sequence of events, they are more likely to replace the false information with the retraction(266).

However, this might differ from what consumers reported in this thesis about their preferences for explanations of rumours. They expressed a preference for having rumours explained rather than just denied but did not specifically ask for explanations of how these rumours originated. This discrepancy might be because their expectations are even lower than merely presenting the facts. Additionally, there is often a difference between what consumers say and what they actually do when it comes to assessing the quality and credibility of information(267).

Similar to a recent study surveying cancer survivors in Jordan, this thesis found that consumers take steps to verify the accuracy or trustworthiness of information by consulting a physician or finding similar information on different sources(268, 269). Furthermore, this thesis identified additional methods on how consumers verify information online, particularly on social media (by reading supporting comments from other consumers or other healthcare professionals in the same field). This variation can be attributed to differences in age groups between participants, their use of social media, or the limitations of the surveyed options.

The availability of a credible resource provided by a creditable organisation such as the Ministry would ensure credibility without the need for multiple steps.

Comprehensiveness

A comprehensive health information resource should cover a wide range of topics. Longer, in-depth content requires accurate and culturally appropriate translation. Studies have highlighted the significance of culture-sensitive health communication in improving medical decision-making and health promotion by adapting messages to recipients' cultural backgrounds(270, 271). To ensure comprehensive content in Arabic, collaborative efforts for translation and reviewing content was highlighted by content creators’ participants.

The challenge of a comprehensive presentation of health information from a trustworthy source is the potential impact of the relationship between source trustworthiness and concerns among health anxious individuals. Baumgartner & Hartmann (2011) found that the more trustworthy a source is, the greater the worries among health anxious individuals(272). This was reflected in my results as consumers expressed the need for reassurance in the provided material. Moreover, they were prone to gatekeep health information they found online from friends and family when searching as a proxy (section 6.6.3).

Accessibility and Usability

Accessibility involves providing content in the user’s preferred language(273), which is particularly relevant to the findings in this thesis. Many consumer participants begin their search for health information in Arabic, highlighting the importance of delivering resources in their native language, even among those with a high level of English proficiency. This preference reflects not only a cultural inclination but also a greater comfort with medical terminology and nuances expressed in their first language. These findings underline the critical role of language in shaping the accessibility and relevance of health information platforms.

A user-friendly website design, featuring clear layouts, interactive elements, and easy navigation, was found to significantly enhance trust and usability (260). Which is similar to consumers participants in this thesis.

Beyond language choice and design, the way information is presented and the credibility of its sources play a crucial role in user evaluations(274, 275). Participants in this study noted that trust in online health information depends not only on the accuracy of its content but also on the clarity of its presentation and the transparency of its sources.

For a comprehensive resource, it is vital to address both the accuracy of translated material and the style of presentation. Poor translations or culturally inappropriate content can undermine trust and usability, driving users to seek alternative, less reliable sources.

Ethical Considerations

Participants who were content creators emphasised the importance of upholding personal and professional ethics, including discouraging self-diagnosis, ensuring accurate and evidence-based information, and protecting user and patient privacy. They acknowledged the dual-edged nature of social media: while it offers a platform for busy professionals to share their expertise and reach a wide audience with minimal effort, it also creates opportunities for imposters to spread myths, misinformation, and disinformation. Content creators highlighted the responsibility of healthcare professionals to distinguish themselves through transparency, such as using verified accounts, sharing credentials, and engaging actively with consumers to build trust.

8.4.3. Healthcare professionals as online content creators

Research on healthcare professionals as online content creators is scarce. Available literature about online health information content and healthcare professionals (Chapter 1) address the quality between different type of websites, media by content creators(48, 92, 233) or the performance of health institutions on social media(41). Furthermore, existing literature about healthcare professionals' use of social media focuses on the amount of use and networking with other healthcare professionals rather than on the provision of information(276).

Although consumers' digital health literacy is essential for content creators or healthcare agencies to consider, it is equally important to consider how to mitigate the lack of human touch when consumers access health services digitally(277). This could explain why healthcare professional content creators are popular with consumers.

This study found that healthcare professional content creators had multiple motivations to provide Arabic online health information online. Some of them are in line with previous studies of YouTube content creators, such as spreading medical awareness, self-promotion and reducing time in clinics(38, 43). However, other identified motivations in this study were not found in earlier research, such as the natural progression of health promotion in person and traditional media and obeying the requests from friends and family.

This study found that content creators' decision-making process can be influenced by their perception of themselves, as well as their perception of needs and preferences of their audience. Some of these perceptions align with a paternalistic model of healthcare, observed in a recent study of a sample of Saudi Arabian doctors and patients, indicating a preference for healthcare decisions to be made by professionals rather than patients(278). Paternalistic tendencies may have contributed to the finding that consumer participants in this study expected comprehensive health information resources from the government and healthcare professionals(279).

The decision to cite or refer to the source of content in online health information can be contentious, reflecting aspects of paternalism. Interviews with Egyptian doctor-influencers revealed a consistent effort to share evidence-based health information with their audiences, without always explicitly citing their sources. While these doctors claimed to base their content on research evidence, they rarely presented this evidence to their audience, assuming that their professional identity alone would imply credibility. This reluctance to cite medical research stems from concerns about audience comprehension, attributed to factors including low educational attainment, weak research skills, and language barriers(280). Similarly, a study analysing 48 YouTube videos by doctor-influencers found academic research cited primarily in content that addressed medical controversies, new healthcare treatments, misinformation, or common medical mistakes(280). In this thesis, interviews with healthcare professional content creators echoed these concerns, citing difficulties in audience comprehension and the time-consuming nature of referencing information in social media posts. Similarly, some professionals also expressed a belief that they themselves serve as the reference simply because they are 'a doctor' and would imply credibility.

Relying on professional identity instead of research as credibility for the accuracy of health information can have unwanted side effects. This may include spreading misinformation by non-qualified people presenting confidently as healthcare professionals and doctors producing content outside their areas of expertise for commercial gain. In such situations, individuals are likely to trust and accept information, advice, or recommendations from these professionals without verifying its validity. This was highlighted in this thesis by one consumer participant and the exclusion of a content creator as the individual, despite having a large following, did not hold any medical qualifications.

Eysenbach and Jadad (2001) suggested that some healthcare professionals act as gatekeepers of knowledge, restricting consumer access to information (281). However, two participants in this thesis disputed this notion, stating that their intention is not to gatekeep but rather to prevent potential misuse of scientific information by lay audiences.

Despite these perspectives, consumers value the availability of references in online health content, even if they may not always check them. This highlights the importance of transparency and accountability in health communication, ensuring that consumers have access to the sources underlying the information they encounter.

Healthcare professional content creators on social media face a variety of advantages and challenges in their work. They derive satisfaction in creating a positive impact, establishing credibility, and improving their skills. Nonetheless, they encounter challenges including limited resources, misinformation, governance issues, and addressing controversial subjects. This thesis also emphasised the significance of integrating personal experiences with medical knowledge to produce compelling content. Content creators' own life and clinical experiences heavily influence the stories they share, lending depth and authenticity to their material.

The study conducted by Atef et al. (2023) aligns with these views by highlighting how YouTube vlogging, which is how that study defined their participants who are healthcare professionals who posted video content on YouTube, offers a sense of authority, acknowledgment, and professional development for individuals(43). It also serves as a platform for enhancing digital communication abilities and enhancing expertise in healthcare.

One notable aspect that influences content creation is the legal framework pertaining to healthcare professionals' use of social media platforms. While regulations in Western countries often outline expectations for online conduct among medical professionals(282, 283), this thesis as well as the work conducted by Atef et al. (2023) found a lack of similar restraints within the Saudi and Egyptian context. The lack of legal requirements may impact how Arab healthcare professionals utilise social media, suggesting a need for authorities to oversee and regulate health information provision.

8.5. Implications for policy and practice

These research findings can provide practical implications for policy and practice. They open a new perspective for policy maker and current and future Arabic online health information content creators.

8.5.1. Implications for practice

Consumers of Arabic online health information found available information to be scattered and good quality information harder to find. However, many of them find the information they do find useful. One way of doing this, therefore, is to encourage them to seek out and ask for credible information. They can ask for more credible information by engaging with and supporting the content they find valuable, as content creators are significantly influenced by social media algorithms.

Although consumers perceived content on social media as lacking depth, content creators observed that this type of content is what attracts the most public engagement. This discrepancy highlights the tension between the demand for accessible, engaging content and the need for comprehensive, detailed information. One way to bridge this gap is through content recycling, where in-depth content is repurposed into short, concise, and engaging segments for social media. This approach allows creators to maintain the integrity and quality of the information while adapting it to the format that resonates most with the audience, thereby enhancing engagement without compromising on depth.

The algorithmic nature of social media makes it an effective platform for health promotion campaigns rather than for disseminating lengthy, static information. Therefore, it is essential to use these platforms strategically.

Current content creators face challenges in time and human resources. Providing adequate support to them can ease their burdens and present opportunities for professionals in translation, copy editing, technology and art.

Consumers’ wish for a comprehensive resource for Arabic online health information is faced with some reservation and challenges from current content creators. Collaborative efforts to develop such a resource, while creating a supportive environment for both consumers and content creators, are essential. This calls for involvement from policymakers and or other stakeholders. Detailed practical recommendations based on these research findings are provided in Section 9.1.

8.5.2. Implications for policy makers

The challenges faced by both consumers and content creators in accessing and providing reliable Arabic online health information present significant opportunities for policymakers to intervene and offer solutions.

Firstly, policymakers should invest in the creation of a comprehensive, authoritative platform for Arabic health information. This platform can be developed through collaboration between government agencies, healthcare organisations, and individual healthcare professionals to ensure its reliability and comprehensiveness. The objective is to provide consumers with a centralised, trusted source of health information in Arabic, thereby addressing the current scattered nature of available information.

Secondly, a robust verification system for healthcare professionals who provide online content should be implemented. This system can ensure that all healthcare providers are licensed and qualified, thereby enhancing the credibility of health information and protecting consumers from misinformation spread by unqualified individuals.

Additionally, a legal framework should be established that allows for the reporting of imposters who use fake qualifications to spread mis/disinformation. This measure aims to protect public health by reducing the spread of false or misleading health information online.

Support systems and guidelines should also be developed to assist content creators in producing high-quality, credible health information. This support would include providing resources, training, and a regulatory framework to ensure the accuracy and reliability of the information shared online. By facilitating the creation of reliable health content, the capacity of content creators to meet the demand for accurate health information in Arabic can be enhanced.

Furthermore, policymakers should launch strategic initiatives to increase the production and dissemination of health information in Arabic. This includes funding and supporting content creators and healthcare institutions to produce and share reliable and accessible health content. The objective is to address the shortage of high-quality Arabic health information and ensure that consumers have access to reliable health resources.

By addressing these key areas, policymakers can significantly improve the landscape of Arabic online health information, benefiting both consumers and content creators.

8.6. Areas for future research

Although the small sample size of both interviewed groups limits the generalisability of preferences (across all specialities and age groups), this study has found similarities between participants which provide insights for further exploration. Future research could explore the following areas to improve online health information in Arabic.

- Exploration of the effectiveness of the practical recommendations after implementation with specific groups of consumers by policymakers or researchers.
- Further exploration of healthcare professional content creators in specific specialities and platforms can further help shape specific needs with regards to healthcare.
- Exploration of consumers' attitudes towards sharing health-related experiences and contributing to online health information.
- Further exploration to understand how the findings from this thesis are relevant to physician vloggers across different cultural landscapes.
- Investigating how healthcare professionals see their role in efforts to enhance digital health literacy among Arabic-speaking populations.
- Regarding regulatory frameworks for health information on social media, comparative studies could analyse existing regulatory frameworks in different countries and their effectiveness in ensuring the credibility and ethical dissemination of health information. This can provide insights for developing similar frameworks in regions lacking such regulations.

Chapter 9. Practical Recommendations and Concluding Remarks

9.1. Practical recommendations for implementation

Based on the detailed insights provided by consumers and content creators and existing literature, the following criteria and recommendations are proposed for developing an effective and trusted Arabic online health information resource:

- Comprehensive Coverage
    - Broad Range of Topics: Detailing various health specialties, including general health and mental health.
    - Multiple Levels of Detail: Offer both summaries for quick reference and in-depth information for those seeking more comprehensive knowledge.
    - Up-to-date Information: Regularly update content to reflect the latest medical advancements and guidelines.
- Credibility and Trustworthiness
    - Qualified Authors: Ensure content is authored and reviewed by licensed healthcare professionals with visible credentials.
    - References and Sources: Include references for all claims, with citations from reputable medical journals and institutions.
- User-Friendly Design
    - Search Functionality: Implement advanced search options, allowing users to filter by body part, symptoms, age group, and medical specialty.
    - Multimedia Formats: Provide content in various formats (text, video, audio, infographics) to accommodate different learning preferences.
    - Simple Language: Use clear, simple language, avoiding relying on medical jargon unless necessary, with explanations provided.

- Accessibility

    - Language Options: Offer content in classical Arabic and various local dialects to cater to different regional audiences.
    - Mobile-Friendly: Ensure the platform is fully functional on mobile devices.
    - Inclusivity: Consider the needs of users with disabilities, providing features like text-to-speech and high-contrast modes.
- Community and Interaction
    - Interactive Features: Include Q&A sections and the ability to contact healthcare professionals for teleconsultations.
    - Content Recycling: Repurpose existing content into new formats to reach different audiences and maintain engagement.
- Foster a Supportive Environment for Content Creators
    - Technical and manpower support: Provide support such as translators, editors, photographers and tools such as, fully equipped studios. Which will help reduce the time needed for content creators to buy and learn and produce their content.
    - Professional Development: Provide opportunities for content creators to receive training and professional development in digital health communication.
    - Recognition and Incentives: Recognise and incentivise the efforts of healthcare professionals who contribute to the dissemination of reliable health information. This could include public acknowledgments and financial incentives.

9.2. General Conclusion

This thesis explores the complex interplay between consumers and content creators in seeking and providing Arabic online health information. The cyclical dynamics of social media engagement, the criteria for trustworthy health information, and the role of healthcare professionals as content creators present unique challenges and opportunities.

Enhancing the credibility and accessibility of online health information has been shown to empower consumers and improve health literacy. Therefore, providing credible and accessible online health information in Arabic will benefit Arabic-speaking populations. Collaborative efforts aligned with broader initiatives such as Saudi Arabia's Vision 2030 can foster a robust digital health information infrastructure, potentially promoting a healthier, well-informed society. By adhering to recommended criteria, an Arabic online health information resource can effectively serve the needs of consumers and empower content creators to provide high-quality, trusted health information.

A credible online health information resource can provide significant benefits for the wider Arabic-speaking community, including Arab refugees. Health literacy is particularly challenging for refugees due to language barriers, a lack of access to reliable information, and the stress of displacement. By offering high-quality, trusted health information in Arabic, we can help improve health outcomes and support the integration of refugees into new healthcare systems.

In conclusion, the establishment of a comprehensive and credible digital health information infrastructure is paramount. By fostering collaboration among stakeholders and adhering to ethical standards, we can create a more informed and healthier society. This research contributes valuable insights and sets the stage for future studies to build upon, ultimately supporting the broader goals of initiatives such as Saudi Arabia's Vision 2030.

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Appendices

Appendix 1 Scoping review Search strategy

Set	Search Statement
1.	access to information/ or digital divide/ or information dissemination/ or health literacy/ or information seeking behavior/ or internet access/ or online social networking/ or consumer health informatics/ or dental informatics/ or medical informatics/ or nursing informatics/ or public health informatics/
2.	internet/ or internet access/ or social media/
3.	saudi arabia/
4.	health education/ or consumer health information/ or health literacy/ or health education, dental/ or exp patient education as topic/
5.	saudi*.tw,kf.
6.	(online or internet or social media).tw,kf.
7.	((health or medical or patient or consumer) adj4 (information or promotion or literacy or knowledge)).tw,kf.
8.	("social media" or twitter or facebook or youtube or whatsapp or "online forum" or instagram).tw,kf.
9.	("social media" or blog* or "content communit*" or "social networking site*" or "online social network*" or "online communit*" or "online forum*" or Facebook or Twitter or Wikipedia or YouTube).tw,kf.
10.	((e-health or ehealth) adj4 (information or literacy)).tw,kf.
11.	3 or 5
12.	2 or 4 or 6 or 8 or 9
13.	1 or 4 or 7 or 10
14.	11 and 12 and 13

Appendix 2 Summary of studies included in the Scoping review

Table 3 Summary of studies included in the review

Author / Year	Sample	Internet / website	Social media
Abdel-Latif et al., 2019(133)	500	37	
Al Ghamdi et al., 2018(152)	417	55.8	
Al Hakeem, 2012(153)	3702	4.6	
Al Lahim et al., 2018(154)	379	46.7	
AL Malki, 2014(155)	137	29.9	
Al Rashed et al., 2017(156)	711	54.1	28.6
Al Rumaih et al., 2017(157)	670	15.1	
Al-Amoudi & Abduljabbar, 2012(158)	500	40.4	
Al-Ghamdi et al., 2019(159)	274	21.9	
Al-Ghareeb, 2009(160)	350	22.3	
Al-Haddad et al., 2016(161)	826	54	
Al-Johany et al., 2010(162)	379	12.7	
Al-Shawi et al., 2018(163)	1030	32.8	13.6
Al-Zalabani et al., 2018(164)	465	33.1	
Aldahash et al., 2012(165)	399	74.19	
Alfawaz et al., 2018(166)	448	22	3
Alfayez et al., 2018(167)	388	25	
Alhaddad et al., 2014(190)	900	17.9	
Alhazzazi, 2016(143)	400	25.10	38.7
AlHilali et al., 2016(168)	200	9.5	
Almutairi et al., 2017(169)	721	25.9	
Alomi et al., 2017(170)	120	60	
Alruwaili et al., 2018(192)	367		19.6
AlSaadi, 2012(171)	505	12.1	
Alsaihati et al., 2018(172)	250	19.6	
Alshahrani, 2019(193)	416		38.7
Alshahrani et al., 2019(194)	500		52.4
Alsharidah et al., 2018(173)	648	20	
Alshehri et al., 2017(195)	419		44
Alsheri et al., 2019(174)	576	53.8	
Alsiddiky et al., 2019(175)	750	16.8	38.4
Alyami et al., 2018(196)	668		26.8
Alzaidi et al., 2018(197)	389		17.2
Bahammam, 2015(176)	454	52.2	
Bawazir et al., 2018(177)	676	89	
Bin Huwaymil et al., 2017(178)	675	32	
Bin Shibrayn et al., 2018(198)	1021		28.8
Emara et al., 2019(179)	363	18.5	
Ghunaim et al., 2018(199)	328		24.4
Gonzales et al., 2018(180)	361	18.6	
Ibrahim & Boulos, 2006(218)	150		
Ibrahim et al., 2011(181)	~~1549~~	~~54.2~~	
Ibrahim et al., 2017(200)	225		49.8
Imran et al., 2016(201)	~~525~~		~~20~~
Khairy et al., 2017(182)	258	25.6	
Khudair & Aloshan, 2015(151)	71		
Mahfouz & Alghamdi, 2019(183)	440	52.50	
Manakrwi et al., 2018(184)	336	68.2	
Shariff et al., 2019(202)	133		62
Siddiqui et al., 2017(185)	409	67	
Taha et al., 2018(186)	202	32.2	
Al-arabi, 2014(187)	516	33.3	
Al-Zahrani, 2013(189)	390	21.7	
Alfahl and Alharbi, 2017(203)	614		17.4
Mahfouz et al., 2013(188)	1092	15.9	

Al-suroj et al., 2018(204)	319		31.7

Appendix 3 Scoping review full extraction table

Author /Year	Title	Method	Subject	Population	n	Results
Abdel-Latif et al. 2019	Health literacy among Saudi population: a cross-sectional study.	Cross-sectional study using questionnaire distributed at Hospitals, schools, universities and other work places between Feb to May 2015	Health literacy	Saudi individuals 314 (62.8%) males and 186 (37.2%) females	500	Sources of obtaining health information: Internet 37%
Al Ghamdi et al. 2018	Awareness about symptoms and role of diet in renal stones among general population of Albaha City	Cross-sectional study using questionnaire distributed among Albaha general population	Role of diet in renal stones	Aged between 18 to 60 years were randomly selected from the population in Albaha city.	417	Previous Information source: Internet 55.80%
Al Hakeem 2012	Impact of education on knowledge and use of folic acid among Saudi women	Cross-sectional study using questionnaire distributed at clinics of King Khaled University Hospital (KKUH) March to May, 2010	Use of folic acid	Saudi women (pregnant and non pregnant) who visited antenatal and other clinics	3702	source of information about the knowledge of folic acid: Internet 4.6%
Al Lahim et al. 2018	Evaluation of awareness and attitudes towards common eye diseases among the general population of north western Saudi Arabia	Cross-sectional study using questionnaire distributed in Social media platforms using Google Doc	Eye diseases	Adult males and females aged above 18 years old of the general population of Tabuk city Most of them were females (77.6%).	379	sources of information: Internet 46.70%
AL Malki 2014	Knowledge and awareness of sexually transmitted disease among male university students in Taif, Saudi Arabia.	Cross-sectional study using questionnaire distributed at faculty of Science Taif University (male section)	Sexually transmitted disease	non-medical students. faculty of Science Taif University (male section)	137	Source of knowledge: Internet 29.90

Author /Year	Title	Method	Subject	Population	n	Results
Al Rashed et al. 2017	Public Awareness regarding Common Eye Diseases among Saudi Adults in Riyadh City: A Quantitative Study.	Cross-sectional study using questionnaire distributed via local marketing company that used the Saudi Telecom Company's database. The online questionnaire along with the objectives of the study was sent to the participants.	Common Eye Diseases	Saudi adult Male 350 (49.2) Female 361 (51.8)	711	Sources of information for accessing knowledge Internet 45.10% Social media 28.6%
Al Rumaih et al. 2017	Assessment of community knowledge toward joint replacement therapy in Jeddah City	Cross-sectional study using questionnaire distributed at malls and community pharmacies.	joint replacement therapy	Adult population in Jeddah City More than half of the subjects were females (57.8%) and 42.2% were males.	670	What is the source of your knowledge? Internet 15.10%
Al-Amoudi & Abduljabbar 2012	Men's knowledge and attitude towards breast cancer in Saudi Arabia a cross-sectional study	Cross-sectional study using questionnaire distributed at King Abdulaziz University hospital (KAUH) outpatient clinics	breast cancer	Men who attended the KAUH outpatient clinics with their female relatives	500	Source of knowledge: Internet 40.40
Al-Ghamdi et al. 2019	Vaccination Knowledge, Attitude And Practice Among Saudi Parents In Makkah - Cross Sectional Study	Cross-sectional study using questionnaire	Vaccination	Saudi parents of children aged from 2 months to 6 years who lives in Makkah were invited to participate in this study.	273	Source of information: Social media 21.90
Al-Haddad et al. 2016	Knowledge and practice of university female students toward breast cancer	Cross-sectional study using questionnaire distributed at public areas at females' campus of the university such as library, canteen, and bookshop.	breast cancer	100% females university students	826	source of knowledge regarding breast cancer Internet 54%
Al-Johany et al. 2010	Dental patients' awareness and knowledge in using dental implants as an option in replacing missing teeth: A survey in Riyadh, Saudi Arabia.	Cross-sectional study using self-explanatory questionnaire in Arabic distributed at Military Hospital and College of Dentistry (King Saud University)	dental implants	74.1% of the respondents were males and 25.9% were females.	379	Sources of the subjects about dental implants: Internet 12.2% Sources of the subjects about the alternatives Internet 9.50%

Author /Year	Title	Method	Subject	Population	n	Results
AL-Mohaithef et al. 2020	Assessment of foodborne illness awareness and preferred information sources among students in Saudi Arabia: A cross-sectional study	Cross-sectional study using questionnaire distributed at Saudi Electronic University (SEU) website	foodborne illness	Registered students at SEU 54.1% of the students were female.	429	Students identified information source about food poisoning: Government website 171(39.9) Public Internet Website 107(24.9) Health interest websites 106(24.7) International website such as WHO. 107(24.9) Social media 170(39.6)
Al-Shawi et al. 2018	Misconceptions of Parents about Antibiotic use in Upper Respiratory Tract Infections: A survey in Primary Schools of the Eastern Province, KSA	Cross-sectional study using questionnaire distributed at Schools	antibiotic use for the upper respiratory tract	parents of children from first to sixth grades, 56.6% were mothers and 43.4% were fathers	1030	Source of information and knowledge score percentage for antibiotic use in upper respiratory tract infections by main source of information: websites 32.80 social media 13.6%
Al-Zalabani et al. 2018	Breast Cancer Knowledge and Screening Practice and Barriers Among Women in Madinah, Saudi Arabia	Cross-sectional study using questionnaire distributed at PHC	Breast Cancer	Women who attended the centre at the time of the research team visit	465	Sources of knowledge: Internet 33.10%
Aldahash et al. 2012	Attitude towards the use of complementary and alternative medicine by patients in Saudi Arabia	Cross-sectional study using questionnaire distributed at outpatient clinics of King Saud Medical complex and King Khalid University Hospitals	Complementary and alternative medicine	patients attending the outpatient clinics of King Saud Medical complex and King Khalid University Hospitals	399	Sources of data about CAM: Internet 74.19
Alfawaz et al. 2018	Awareness and attitude toward use of dietary supplements and the perceived outcomes among Saudi adult male members of fitness centers in Saudi Arabia	Cross-sectional study using questionnaire distributed at fitness centers	dietary supplements	Adult males	448	Sources of information to use vitamins and supplement: Internet 22 Social media 3%
Alfayez et al. 2018	Maternal awareness and attitude about neonatal screening program in the eastern region of the kingdom of Saudi Arabia	Cross-sectional study using questionnaire distributed at Social media	neonatal screening program	Mothers	388	Source of learning about newborn screening: Internet 25%

Author /Year	Title	Method	Subject	Population	n	Results
Alhaddad et al. 2014	General public knowledge, preferred dosage forms, and beliefs toward medicines in western Saudi Arabia	Cross-sectional study using questionnaire distributed at public areas	medicines	Adults 66.8 male	900	The main source(s) of information on medicines is: internet 17.90
Alhazzazi 2016	Evaluation of Head and Neck Cancer Awareness and Screening Status in Jeddah, Saudi Arabia.	Cross-sectional study using questionnaire distributed at Red Sea Mall	Head and Neck Cancer	(28%; 40% male and 60% female)	112	Source of information: Websites 25.1% Social media 38.70
AlHilali et al. 2016	Preferred Method of Education Among Patients in Ophthalmic Care in Saudi Arabia.	Cross-sectional study using questionnaire distributed at Ophthalmology clinic	Ophthalmic Care	110 males (55%) and 90 females (45%)	200	Methods currently used by eye patients to seek knowledge: Internet 9.50%
Almutairi et al. 2017	Assessment of knowledge, attitude and practice regarding antibiotics misuse among the public in Saudi Arabia	Cross-sectional study using questionnaire distributed at AL-Mahd General Hospital in Al-Madinah Al-Monawara	antibiotics misuse	Saudi subjects aged 16 years old or more and could read and write in Arabic language.	721	source of knowledge among participants: internet 25.90%
Alomi et al. 2017	Patients And Healthcare Profissionals' Attitudes And Perceptions On Drug -Related Problems In Saudi Arabia	Cross-sectional study using questionnaire distributed at social media	Drug - Related Problems		201	The resources of information regarding each drug-related problems (internet) Adverse Drug Reaction 67.10% Medication Errors 62.67% Drug poisoning 60.26% Drug noncompliance 54.30% Medication without indications 58.17% Drug Interaction 56.46% Indications without medication 57.52%
Aloqaili et al. 2019	Knowledge about cochlear implantation: A parental perspective.	Cross-sectional study using questionnaire distributed at outpatient clinic at King Abdullah Specialized Children's Hospital	cochlear implantation	One parent (mother or father) of each child with CI in the study center was included	115	Sources they used to obtain information regarding hearing loss and CI: websites 68.70% WhatsApp groups 68% Social media 40.90%
Alruwaili et al. 2018	Knowledge, attitude and practice of the parents regarding child vaccinations in arar, northern saudi arabia	Cross-sectional study using questionnaire distributed at public places	child vaccinations	parents of children and adolescents	367	What is your Information source about vaccinations? Social media 19.60%

Author /Year	Title	Method	Subject	Population	n	Results
Alsaihati et al. 2018	Public Awareness Towards Gerd Among Saudi Population In Al-Dammam City, Saudi Arabia	cross-sectional study based on questionnaire that was distributed randomly	GERD	Saudi citizens, age 20 years old and above. Male participants were more than females[54% and 46% respectively].	250	The most common source to obtain information: internet 19.6%
Alshahrani 2019	An evaluation of the different types of labor pain relief, preferred methods of pain relief, and effects of social media on awareness and knowledge among pregnant women A cross-sectional study in the Kingdom of Saudi Arabia	Cross-sectional study using questionnaire distributed by direct interviews at the Antenatal Clinic at the Department of Obstetrics and Gynecology at the Maternity and Children's Hospital, Najran	labor pain relief	pregnant women attending the Antenatal Clinic All women	416	Source of knowledge regarding labor pain: Social media 38.70%
Alshahrani et al. 2019	Knowledge, Attitudes, and Practices of Breast Cancer Screening Methods Among Female Patients in Primary Healthcare Centers in Najran, Saudi Arabia	Cross-sectional study using questionnaire distributed at primary healthcare centers in Najran city	Breast Cancer Screening	female patients who attended and registered at the five primary healthcare centers in Najran city	500	source of information: social media 52.40%
Alsharidah et al. 2018	Assessment of knowledge and attitude toward organ donation among the Saudi population in Riyadh City.	Cross-sectional study using questionnaire distributed at shopping malls, parks, hospitals, coffee shops, and online	Organ donation		648	Source of knowledge: Websites 20%
Alshehri et al. 2017	Awareness and knowledge of periodontal disease among Saudi primary school teachers in Aseer region.	Cross-sectional study using questionnaire distributed at schools	periodontal disease	Government primary school teachers in Asser region	419	sources of information of periodontal disease: social media 44%
Alsheri et al. 2019	Knowledge and awareness toward anterior cruciate ligament (ACL) injury among population of Aseer region, Saudi Arabia.	Cross-sectional study using questionnaire distributed at malls, campuses, or campaigns	anterior cruciate ligament (ACL) injury	male participants more than females (69% and 31%, respectively).	576	Source of information about ACL injury: Internet 53.80%

Author /Year	Title	Method	Subject	Population	n	Results
Alsiddiky et al. 2019	Assessing public awareness of clubfoot and knowledge about the importance of early childhood treatment: a cross-sectional survey.	Cross-sectional study using questionnaire distributed at shopping malls	clubfoot		750	common sources of information on clubfoot: websites 16.80%
Alyami et al. 2018	Knowledge, beliefs and practices of parents towards childhood vaccination in Najran City, Saudi Arabia	Cross-sectional study using questionnaire distributed at maternity and child hospital in Najran city	childhood vaccination	parents	668	the most effective strategies that persuaded parents to vaccinate their children: social media 26.80%
Alzaidi et al. 2018	Childhood oral health: maternal knowledge and practice in Tabuk, Saudi Arabia	Cross-sectional study using questionnaire distributed at out-patients` clinics of King Khalid military hospital	Childhood oral health	mothers having children aged between 3 and 6 years	389	Source of information: Social media 66.58
Bahammam 2015	Periodontal health and diabetes awareness among Saudi diabetes patients	Cross-sectional study using questionnaire distributed at diabetes clinic in King Abdulaziz University (KAU) Hospital	Periodontal health and diabetes	People with known diagnosis of diabetes (231 males and 223 females)	454	Sources of diabetes-related information: Internet 52.2%
Bawazir et al. 2018	MERS-CoV infection: Mind the public knowledge gap	Cross-sectional study using questionnaire distributed at Five main commercial malls in Riyadh	MERS-CoV	Saudi adults living in Riyadh 353 (52.2%) were males	676	source of information: internet 89%
Bin Huwaymil et al. 2017	Assessment of knowledge, attitudes and practices regarding pulmonary tuberculosis among community in Riyadh city, 2017	Cross-sectional study using questionnaire distributed at Malls	pulmonary tuberculosis pulmonary tuberculosis	Adult Saudi subjects. 45% were females and 55% were males	721	Source of information about TB: Internet 32.00%
Bin Shibrayn et al. 2018	General awareness and knowledge about cataracts, glaucoma and diabetic retinopathy in Saudi Arabia	Cross-sectional study using questionnaire distributed at social media	cataracts, glaucoma and diabetic retinopathy	M 63% , f 37%	1021	Sources of information: Social media 28.80%

Author /Year	Title	Method	Subject	Population	n	Results
Emara et al. 2019	Information Seeking Behavior Among Citizens In Almaddina Almonawrah, Ksa	Cross-sectional study using questionnaire distributed online		females 72.5%.	363	current resource they are using internet 18.50%
Ghunaim et al. 2018	Extent of knowledge and awareness of prostate cancer screening among Saudi men aged more than 40 years	Cross-sectional study using questionnaire distributed	prostate cancer	Saudi men aged more than 40 years		Sources of information about prostate cancer screening: Social media 24.40%
Gonzales et al. 2018	Beliefs and Behavior of Saudi Women in the University of Tabuk Toward Breast Self Examination Practice	Cross-sectional study using questionnaire distributed at University of Tabuk	Breast Self Examination Practice	20-50 years women	382	Source of information: Internet 13.30&
Ibrahim et al. 2017	Cross-infection and infection control in dentistry: Knowledge, attitude and practice of patients attended dental clinics in King Abdulaziz University Hospital, Jeddah, Saudi Arabia	Cross-sectional study using questionnaire distributed at the dental clinics of KAUH	Cross-infection and infection control in dentistry	adult patients aged 18—60 years 42.9 male	225	their source of information: social media 49.80%
Imran et al. 2016	Knowledge and awareness of colorectal cancer among undergraduate students at King Abdulaziz University, Jeddah, Saudi Arabia: A survey-based study	Cross-sectional study using questionnaire distributed at KAU	colorectal cancer	undergraduate students at King Abdulaziz University	525	Source of information about colorectal cancer: Social media 20%
Jradi 2016	Identification of information types and sources by the public for promoting awareness of Middle East respiratory syndrome coronavirus in Saudi Arabia	Cross-sectional study using questionnaire distributed at Two shopping centers were randomly selected from each of the five regions, for a total of 10 centers.	MERS coronavirus	Saudi Adult 61.7 male	658	destination for finding disease information, selected by participants in this study: the internet (39.5%)
Khairy et al. 2017	Knowledge, attitude and practice about malaria in south-western Saudi Arabia: A household-based cross-sectional survey	household based cross-sectional survey	malaria	Head of household 93.8% male	258	Sources of information: Internet 25.60%

Author /Year	Title	Method	Subject	Population	n	Results
Mahfouz & Alghamdi 2019	The Awareness Of Colorectal Cancer Among Saudi Population In The Western Region	Cross-sectional study using questionnaire distributed at public places	Colorectal cancer	364 (82.7%) were women and 76 (17.2%) men.	440	Information Sources: Internet 52.50%
Manakrwi et al. 2018	High altitude and related illnesses awareness among general population in Albaha City	Cross-sectional study using questionnaire distributed among the general population of Albaha city	High altitude and related illnesses	Male participants significantly out numbered females (90.5 vs 9.5% respectively	336	How did you learn about it? Internet 68.20%
Murad & Rafeeq 2016	Pattern of use and awareness of contents, benefits and adverse effects of energy drinks among university students in Rabigh, Saudi Arabia	Cross-sectional study using questionnaire distributed at King Abdulaziz University, Rabigh campus	adverse effects of energy drinks	Students of both sexes, 59.3% Male	548	main source of this information: internet 45%
Nasr et al. 2019	Analysis of public perception about ionizing radiation	Cross-sectional study using questionnaire distributed at shopping mall	ionizing radiation	11.5% male	101	Sources of information about ionizing radiation: Internet 82.31
Shariff et al. 2019	Is non-traditional therapy for multiple sclerosis overwhelming in Saudi Arabia	Cross-sectional study using questionnaire distributed at MS clinic of King Fahd Hospital,	non-traditional therapy for MS	Patients with MS at scheduled follow-up (36.8%) male and (63.2%) female.	133	major source of information: social media 62.00%
Siddiqui et al. 2017	Depression literacy in women attending university hospital clinics in Riyadh Saudi Arabia.	Cross-sectional study using questionnaire distributed at the outpatient clinics	Depression literacy	Women visiting the outpatient clinics	409	How did you obtain the information you have about depression: Internet 67%
Al Shalhoub 2013 <Arabic>	The role of media in enrich health awareness about Diabetes among Saudis: Cross sectional study	Cross-sectional study using questionnaire	Diabetes	65.4% male	413	How much out of 5 do you use the internet as a source for diabetes information (3.46 +-1.34)
Al Arabi 2014 <Arabic>	The use of media by young Saudi adults and the knowledge of obesity, nutrition and physical activity: Cross sectional study in Riyadh	Cross-sectional study using questionnaire distributed at universities and workplaces	Obesity	University students and other Adults Male 56.2%	102	Sources of health information: Internet 23.30%

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Taha et al. 2018	Assessment of the knowledge of gastroesophageal reflux disease among the Saudi population of Altaif City	Cross-sectional study using questionnaire distributed at public places in Altaif City	GERD	Saudi Nationals 74.3% Male participants	202	Sources of information: Internet 32.20
Al-Zahrani 2013	Knowledge , Attitude and Practice of Parents Towards Childhood Vaccination	Cross-sectional study using questionnaire distributed at Primary care centers	Childhood Vaccination	Parents of children 56% male	390	source of parent information about childhood vaccination: internet 21.70
Alfahl and Alharbi 2017	Parents' Knowledge, Attitude and Practice towards Childhood Vaccination, AlMadinah, Saudi Arabia	Cross-sectional study using questionnaire distributed at Public places in AlMadinah	Childhood Vaccination	Parents of children aged from 1 month to 7 years Mothers (86%)	614	Source of information among parents about child vaccination: Social media 17.40
Al-suroj 2018	Awareness and Attitude among Saudi Females toward Breast Cancer Screening in Al-Ahsa, KSA	Cross-sectional study using questionnaire distributed at hospitals in Al-Ahsa	BCa	Saudi female in Al-Ahsa region	319	source of information social media 31.70
Ibrahim et al., 2011	An educational program about premarital screening for unmarried female students in King Abdul-Aziz University	Cross-sectional study using questionnaire distributed to assess knowledge and attitude of unmarried female students in King Abdul-Aziz University (KAU), Jeddah, toward PMS	premarital screening	unmarried female students	1549	Sources of knowledge about pre-marital screening: Internet 54.20%

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
Al-Ghareeb **2009** **<Arabic>**	Knowing the sources of health information for Saudi women, knowing the extent to which they are used in health awareness, knowing the relationship between Saudi women's use of those sources and their level of health awareness, and knowing the opinion of Saudi women and their trends towards the role of the sources in increasing their social awareness and health	Sample survey / questionnaire Stratified sample method: selecting neighborhoods according to their classification (upscale, intermediate, and poor) / secondary schools in the three selected neighborhoods. Selecting a secondary school that is in an intermediate area in the neighborhood so that the school is expected to be representative of the Saudi women residing in the neighborhood / listing the names of the first-grade students. Selection of the sample by the systematic random sampling method from the records in which the names of the students are registered. Beginning with the first singular in number 3, and so on. 150 samples from each school. 350 of 450 completed questionnaires were approved		350 respondents / 40.9% of women aged 20 to less than 30 years!	The level of respondents' follow-up to health information sources on the Internet: 18% always, 20.9% sometimes, 12.9% rarely, 48.3% I don't follow /		The extent of the respondents' benefit from health information sources: the Internet: 24.3% very useful / 36.3% useful / 29.7% somewhat useful / 5.4% not useful. The level of benefit from the internet: high 28.9%, average 23.1%, low 16.9%, not having any benefit 17.1% / the respondents' insights about the level of presentation in the internet of health information: good 5.7%, medium 18. 9%, poor 14.5%, I don't know 60.9%.
AL-Mohaithef et al. **2020**	to study the awareness on foodborne illness among students, and their preferred information sources in the Kingdome of Saudi Arabia.	a cross-sectional study among registered students of Saudi Electronic University (SEU) located in five major cities (Abha, Dammam, Jeddah, Madina, and Riyadh) in the KSA. designed a web-based study questionnaire related to knowledge and information sources on foodborne	429	statistics of the demographic characteristics of the study population. Of the 429 study participants, 232 (54.1%) of the students were female students. 337 (78.6%) students were from bachelor level education.		Sources of information about food poisoning (n = 429). Students identified information source about food poisoning n, (%) Government website 171(39.9)	

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
		illness, and was administered to the registered students of SEU.		252 (58.7%) students were from the college of health science education. Of the eight geographical study locations, most of the respondents were from Riyadh (30.2%), Abha (27.5%), Dammam (22.6%), and Jeddah (15.9%) campus./		Public Internet Website 107(24.9) Health interest websites 106(24.7) Social media like (WhatsApp, Facebook, Instagram) 170(39.6) International website such as WHO. 107(24.9)	
Alassiri & Alowfi **2019**	to assess the attitudes of the general population of Saudi Arabia towards seeking health information through Twitter.	cross-sectional study conducted among Twitter users in Saudi Arabia to determine their attitudes towards seeking health information on Twitter as a medium of information A survey link posted as a tweet by the researchers and shared among Twitter users with different traits or demographic characteristics as strata to reach out to a greater number of the Saudi population.	384	most were male (242, 63.0%). There were 360 (93.8%) who were Saudi nationals/ Most of the respondents have a Twitter user for one to five years (283, 73.6%)		66.7% searched for general knowledge/ Accounts belonging to particular physicians 36.2%, governmental health institution 27.3%	The majority of respondents have a positive response (199, 51.8%) to using Twitter as a source of health information / Moreover, most of the respondents (131, 66.0%) preferred Twitter due to its ease of use and access/ 6.5% very satisfactory level of obtaining health information through Twitter, 43.5 Satisfactory/ 2 people experienced harm caused by false information on Twitter

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
Albarrak et al. **2016**	to evaluate the access of obesity health related websites and further to measure the satisfaction and the effect of these websites in their decision-making among college students	a cross sectional study conducted among students at King Saud University (KSU), Riyadh, Saudi Arabia, from March 2013 to April 2013/ A self-administered questionnaire, was distributed randomly to students at the campuses of the King Saud University.	448	A total of 448 students (177 males and 271 females) participated in this study.	On average, how often do you use health related websites?: (hours/week) 0-1: 44.9%, 2-4:22.5%, 5-6:12.1%, 7-9:6.9%, 10-20: 11.2%/		How useful is the information you find from health related websites? Useful 59.1%, I don't know 28.6% / how would you rate the quality of the content of health related websites? Excellent 46.9%, Average 39.5% .
Alduraywish et al. **2020**	to (1) investigate the different sources that the Saudi Arabian population uses and trusts for medical information and (2) assess the impact of these sources on medical knowledge and the patient's health decision-making.	an observational cross-sectional study/ A random selection was performed of all attending Saudi male and female patients aged 16 years or more, which is the cutoff age for patients attending the adult primary care clinics./ recruited using simple random sampling, which was conducted through a random number generator software.	413	The majority of the respondents were female (314/413, 76.0%)./		Ranking for different sources used for health information. (First position): Social media 1.9%, Doctors who are on social media 12.1%,30.6%, 22.9%, Internet search 15.2%, 22.3%, 24.5%.	The level of trust in each source of health information (completely, partially, No trust): WhatsApp (6.6, 37.1, 56.1), Snapchat (6.9, 39.9,53.1) Twitter (1.8,50.9,47.6), internet search (7.9,70.5,21.5)/ it is possible to get a medical diagnosis from a doctor on social media (44.6% Agree)
AlGhamdi & Almohedib **2011**	To examine Internet use by outpatients to search for medical information and to assess their general experience and	self-administered questionnaire on Internet use, written in Arabic, was distributed to dermatology outpatients while they were waiting to see their dermatologists at King Khalid University Hospital	432	A total of 432 of 500 outpatients returned the questionnaire while waiting to see their dermatologist, providing a response rate of 86%. Their mean ± standard deviation age was 29.7 ±		Most patients who surfed the Internet did so using Arabic (their native language) alone (56%) or in conjunction with English (39%). / visited by patients to obtain medical	most patients said they would trust the information if it had been written by a doctor (60%) or a health institution (43%). Most patients (95%) reported that they did not trust all

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
	satisfaction with the Internet.	(KKUH), King Saud University, between January and June 2008.		10.0 years (range: 18–72 years). Of the 431 respondents who indicated their gender, 185 (43%) were females. / Younger patients (aged £ 45 years) tended to use the Internet more than older patients to search for health related information, but this difference was not statistically significant. Women tended to use the Internet to search for medical information much more than men (P = 0.0001). Higher education was associated with Internet use to search for medical information (P = 0.0001). Patients with higher incomes also tended to search more for online medical information (P = 0.0001). Patients with a chronic skin disease (> 2 months in duration) tended to use the Internet more than those with acute illness (< 2 months in duration); however, this difference was not statistically significant. There was no association between the severity of skin disease and use of the		information were mostly doctors' personal websites.	medical information found on the Internet (Table 4). / When asked about their personal experience in using the Internet to obtain medical information, 69% (277/401) of respondents indicated that it was beneficial. However, 36% (125/346) of respondents stated that the quantity of health-related information on their dermatological disease available on the Internet was either somewhat or very deficient (data not shown). Overall, 42% (167/399) of respondents stated that they sometimes trusted the data they obtained from the Internet, whereas almost 8% (30/399) always trusted Internet information. The majority of our patients (53%) stated that they would never apply medical information obtained from the Internet without consulting a doctor.

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
				Internet to search for health information (Table 2). / Younger age (26–45 years), female gender, higher education level (university and postgraduate), and higher monthly income were significantly associated with outcome. Thus, study subjects with these characteristics were more likely to use the Internet to search for health-related information patients tended to search mostly for information on their own condition (30.9%) and for general medical information (31.6%). For family or friend (14.2%)			
AlGhamdi & Moussa **2012**	to study the public use of the Internet in Saudi Arabia to search for HRI, determine the type of information sought, evaluate patients' perceptions of the quality of the information available on the Internet compared to their health care profissionals and to determine if patients who use the Internet for HRI	cross-sectional survey conducted on male and female outpatients and visitors at the waiting area of the general pharmacy, which serves all clinics including primary care at the King Khalid University Hospital, Riyadh, Saudi Arabia	801	400 males (50.1%) and a mean age of 32 °æ 11 years./ Females visited more websites than males (p < 0.001)/ Individuals with university education or higher and those with higher income also searched for HRI on more websites (p < 0.001). Eighty five percent of respondents (350/412) used	A proportion of those who used the Internet to search for HRI did so less than five times per month (41.5%, 320/771) and searched for information on less than five		criteria used by the respondents to evaluate the quality of HRI obtained from the Internet included: design (21.6%, 66/306) and sponsorship by a medical association (78.3%, 285/364)/ 16.7% (54/324) considered any information obtained from the Internet as reliable/ Only 5.7% (27/475) of respondents always trust

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
	discuss this information with their doctors.			the Internet to search for information about their own medical conditions, 76.3% (267/350) looked for information regarding the conditions of family members or relatives and 83% (322/388) searched for general HRI.	websites (34.5, 266/770).		the HRI obtained from the Internet, while 33.1% (157/475) often did so and 51.4% (244/475) did so sometimes. / The majority of users considered using the Internet to search for HRI as useful (84.2%, 401/476), while 1.5% (7/476) considered it as harmful and 14.3% (68/476) considered it as neither useful nor harmful. Fifty-three percent (242/475) considered the HRI available on the Internet complete, while 28.9% (132/475) considered it incomplete.
Alghamdi et al. **2019**	to investigate the use of internet as a source for health information and analyzing the related factors for internet as a source for health information among students in Jeddah, Saudi Arabia.	A cross-sectional study was conducted between September 2017 and February 2018 We recruited 164 high school students, undergraduate and postgraduate students living in Jeddah, Saudi Arabia. Students ≥16 years old were eligible to participate. University students were recruited from King Abdulaziz University in Jeddah. We used flyers and social media	164	53% of them were females and 86% were less than 25 years old. For whom did you searched for health information on the internet? Myself only 37%, parents 2.4%, another person 1.8%, All of the above 73.2	and 46.3% (n = 76) did that daily /		More than three quarter(84.4%) perceived internet health information as a help for improving their health status. / We found 87.2% (n = 143) of the participants trusted some of the internet's health information they retrieved, compared to nearly 10% who stated they trusted all internet health information / Half of the participants (54.3%)

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
		to invite students to participate in the study. Excluded from the study were students who suffered from health problems that affect their ability to use internet.					found moderate benefit from the health information they got from the internet and 26.2% (n = 43) reported a large benefit from it.
Alhaddad **2018**	to measure the use of social media applications for health related information among residents in Saudi Arabia, frequency and sources of receiving health related information on social media, and patients' preference of the presence of health related education on social media from official sources.	A cross sectional research design using non-probability convenience sampling technique was used in this study between 20th of September to 1st of December 2017. Data collectors distributed the questionnaire among respondents through either face to face in public areas or through online survey where an online link was built and distributed to major social media groups in Saudi Arabia using WhatsApp, Twitter and Instagram. Respondents were given the freedom to participate in the study. They were informed that all the collected information will be kept confidential and none of their personal data that could identify them will be published.	751	Mean age of respondents was 29 ± 12.2 years. As shown in Table 1, majority of respondents were of university education 57.8%, males, 69.5% and live in city 94.5%.	about 6% and 18% of respondents use social media to search on medicines related information on the daily and weekly basis, respectively. On the other hand, 12.6% and 22.6% of respondents receive medical related information on social media daily and weekly, respectively.	WhatsApp, Snapchat and YouTube were the main social media applications used among our respondents 83.8%, 65.3%, and 58.7%, respectively. /	

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
Almaiman et al. **2016**	The purpose of this study is to estimate the prevalence of online Arabic OHRI seekers, identify their preferred social media platform, and its impacts on OHRI seeking behaviour.	A cross-sectional original web-based survey using 13 questions was sent to a health focused Twitter account with 5,300 followers.				more than two quarters, 67.7% (n=1796), of participants reported preferring Arabic online OHRI. / Yet, although most of the online seekers, 41% (n= 1091), had no preference to specific social media platforms when searching for OHRI, 20% of them (n= 533) prefer seeking OHRI via Twitter, 14.5% (n=384) via YouTube, 9.7% (n= 256) via Snapchat, 6.8%, 6.6% via Facebook or Google (n= 180 and n=176 respectively), and only 1.2% (n=32) via Instagram.	More than one third of the participants (n=928) reported positive change of their attitude and behaviour towards oral health as a results of OHRI, and 44.6% (n=1184) reported an increase level of their awareness.
Alrashid **2006**	to offer insights on the use of the Internet as an education tool among Saudi Arabian students for online health information.	surveying The sample was selected from the Institute of Public Administration (IPA) in Riyadh City in Saudi Arabia	336	As noted previously, the researcher collected data from 336 individuals; among them 251 are undergraduates and 85 graduates, and 167 men and 169 women. In this study, gender differences were noted; for instance, women were more likely to use the Internet for health information. This reflects the nature of Saudi culture, where young women are unlikely to contact a male physician without the	Number of Times Participants Browsed the Internet for Health Information (time/week): 32% Never, 45.5% 1-2,	Barriers to Use of the Web for Health Information: rank 2 : Not being able to find the information I am looking for in my own language. After it takes too long to view and download pages. No, 3: Not being able to recognize the reliable health information.	

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
				presence of relatives, reinforcing the need for high-quality online health information.			
ALrukban **2014**	to describe the health-related use of SNS among users in Saudi Arabia.	A cross-sectional study design was adopted for this study. It was carried out between 15 March and 15 April 2013 and included current users of Twitter in Saudi Arabia.	816	Almost two-thirds (62.3%) of the respondents were women. The majority (83.1%) were £34 years of age. / There was a significant association between the gender and whether or not the SNS users followed health accounts ($p < 0.001$). Female users were 1.8 times more likely than male users to follow health accounts. Moreover, female users were 1.6 times more likely than male users to appropriately trust health information ($p = 0.031$).		public health accounts (69.8%) and personal accounts of physicians and health practitioners (62.1%) were the most reported type of health accounts followed by users.	Over 81% of users have benefited from any health information they saw on SNS / 86% of the users trust health information only if from trusted sources and 72.1% of them check the information from other sources / Table 6 shows that 85.4% of users trusted a health information if the source was an international health organization account. Similarly, health information from personal physician accounts and local medical institute's accounts were trusted by 83.9% and 79.3% of users, respectively. /
AlSaadi **2012**	aimed at assessing the extent, sources and effects of Internet use by parents of asthmatic	A cross-sectional design to collect data from two pediatric pulmonology clinics (public, private) for asthma management in Riyadh, Saudi Arabia, during the period of January to May 2011	505	More education of father and mother For their child	Time spent on internet for asthma (n=325) 52.3% 10 to 29 min [is it for an	The most important limitations of Internet use for obtaining asthma-management information included non-availability of Arabic language information (57%) and the	Internet offered solutions to asthma related questions? (n=344) 78.8% Sometimes/

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
	children in Riyadh, Saudi Arabia.	from a random sample of 500 parents of asthmatic children undergoing treatment at two pediatric pulmonology clinics at King Khalid University Hospital			episode of search?]	highly technical nature of the information (25%), which was not easily understandable./ search engines 81% Google/	
Alwehaibi & Almeman **2014**	To estimate the proportion of patients in Qassim Province, Saudi Arabia, who use the Internet to search for health-related information, determine barriers to Internet use, and investigate the relationship between Internet use and socio-demographic variables.	cross-sectional survey The target study population was patients who used the Internet and visited Ministry of Health (MOH) hospitals in the Qassim Province, Saudi Arabia	325	A high percent (38 %) were > 35 years of age, and greater than one-half were male (59.7 %). / There were no associations between Internet use for health-related purposes and age (p=0.142), sex (p=0.7), marital status (p=0.5), employment status (p=0.1), or monthly income (p=0.4). There was, however, a statistically significant association between Internet use and education level (p = 0.002).	Analysis of the frequency-of-use results revealed that in the 3 months before completing the survey, 88.6 % and 11.4 % performed health-related searches 1 to 5 times and 6 to 8 times, respectively. No patient reported conducting health-related Internet searches > 10 times.	66% mentioned that their inability to read or write English is a major barrier for internet use for health information	59% mistrust health information on the internet/
Alzahrani & Alanzi	to analyze the use of social media by people with diabetes in Saudi Arabia and to know the	a cross-sectional survey was carried out with a random sample of 158 people with all type of diabetes living in Saudi Arabia.	158	we can perceive that more than half of the respondents (69%) were females, and		the social media employed by the 74 participants (47%) who used these communication tools for obtaining diabetes	most of them considered that social media were useful in raising public awareness and

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2019	purposes, benefits and risks of its use	The survey was distributed using WhatsApp and Twitter accounts of diabetic associations in Saudi Arabia. Descriptive statistics was used to analyze the data.		90% of the surveyed were Saudis.		related information were WhatsApp (67%), Twitter (66%), Snapchat (39%), Emails (15%), Telegram (11%), Skype(3%), and Tango (1%). YouTube (45%).	contributed to health education and advice to people with diabetes. some of them believed that social media were less expensive than medical consultations. On the other hand, some of them pointed out that the published information may cause risks to patients and indicated that social media can breach the privacy of patients. / Participants' opinion about Diabetes-related information (n=74) Accurate: 41% Don't know. Reliable 30% Disagree. Educational 69% Agree.
Alzhrani **2019**	to analyse the factors that could contribute towards effective communication strategies to increase the early detection of breast cancer among Saudi women.				"Sometimes the information pops up on my social media platform such as WhatsApp, so I save it for later or I screenshot the information to make it easy to access later even without	Platforms: "YouTube has a range of health topics that have been discussed by doctors or specialists, most of the time." (Participant 7). // "I prefer YouTube; people nowadays access YouTube more than any other platform. Famous women from Saudi Arabia have YouTube accounts that have lots of followers, and most of them are women." (Participant 3). /	Participants show inaccuracies that raise concerns about the quality of the online health information. / "Sometimes I search in the Western health websites just to make sure"

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
					internet data". (Participant 4).	percentages of participants feeling they recieved moderate amount of information YouTube 51.65%, Twitter 44.51, Saudi society for cancer website 24.02, E-charirty websites 15.73, Zahra breast cancer association website 17.14, Taiba Cancer screening center website 15.43, Facebook 17.71, Instagram 27.43, Snapchat 8.67. She indicated: "When I find any health information, I look on other websites to make sure that information is correct. I also try to search on government health websites". a specific website was provided from a government health facility. /	
Bahkali et al. **2016**	to provide a survey of the prevalence and behaviour of online medication information seekers in Saudi Arabia. This work will help future researchers and health practitioners plan interventions to improve	a cross-sectional survey conducted in Saudi Arabia using a self-developed web-based questionnaire with 13 questions. The target and scope of the study was the Saudi social media using population. Saudi citizens following a health Twitter account with 5,300 followers were invited to	4847			The majority of online MRI seekers 63.5% (n= 3080) reported Google as their primary source of information This was followed by Twitter 28.7% (n= 1392), Snapchat 20.4% (n=989), WhatsApp 13.8% (n= 670), Instagram 11.4% (n= 553), Facebook 5.5 % (n= 267), with 1.3% (n=65)	

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
	the quality of public health outreach.	participate in the survey. The participants were also encouraged to recommend and share the survey with others				using YouTube to search for online MRI.	
Basyouni et al. **2015**	to identify the online asthma informational needs of patients with asthma in Saudi Arabia, explore participants' previous use and interest in online asthma health information, and explore factors associated with online information seeking and needs	prospective cross-sectional study of a self-administered survey, The survey was offered to patients who were clinically diagnosed with asthma and aged 18 years or older, or who were adult caregivers of an adult patient.	83	the majority of the participants were females.(61.4)		Around 67% of participants who use the Internet have searched for asthma information online in Arabic, with 13.3% reporting the Internet as their main source of information about asthma. /	
Bin Saleem et al. **2016**	to assess the prevalence of health seekers, the reasons for self-diagnosis and the sources of preference for information collection	A descriptive cross-sectional study was conducted at the Princess Nourah Bint Abdulrahman University (PNU) and Prince Mohammed bin Abdulaziz Hospital Riyadh, Saudi Arabia in 2016. The target population was Adults from both genders aged 18 years or older.	632	The sources of preference for information collection were also influenced by the education level. The health information sources largely reported by the higher-educated participants were physicians and the Internet, however less educated participants (less than high school diploma – high school degree) used the Internet in lower percentage (15%-			39% trust the internet as a source

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
		Participants under 18 years old and Hospitalized patients were excluded from the study.		28%) compared to the rest. Family/relatives scored the highest percentage (19%) as a source for health information among participants with high school degree			
Ibrahim & Boulos **2006**	to characterize Internet use by this group (patient with cancer) and to identify various barriers that hinder utilization	questionnaire Adult Saudi cancer patients who report to the outpatient facility of the oncology department at the King Faisal Specialist Hospital and Research Center were the potential participants	150	73 (49%) males and 77 (51%) females		English language illiteracy was the most frequently quoted barriers	only 13% actually used the Internet to seek health-related information. A large proportion of patients thought that the information retrieved was of excellent or good quality (50%), besides being trustworthy (35%). / 93 (62%) of patients were influenced by the ease of use of a particular Web site and 87 (58%) by the currency of the content. On the other hand, sponsorship or the qualifications of authors would only influence approximately one-third of the participants.
Iftikhar & Abaalkhail	to describe the demographic Ωharacteristics of patients that may	cross-sectional survey was conducted between April and June	442	Females comprised the majority of	It is all about receiving	reported receiving health-related messages more frequently on WhatsApp than on Twitter or Facebook.	Do you verify the credibility of health information on social media? Always 40.7%, sometimes 41.5%

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
2017	demonstrate their attitudes toward medical information shared on social media networks. Second, we address how information found through social media affects the way people deal with their health. Third, we examine whether patients initiate or alter/discontinue their medications based on information derived from social media.	2015 on / modified a previously validated questionnaire [15] to specifically target social media users and how medical information found through social media networks impacts the way they deal with their health. Furthermore, we selected highly prevalent public health issues in Saudi Arabia, such as diabetes mellitus, heart disease, hypertension, and asthma patients attending King Abdulaziz University Hospital, Jeddah, Saudi Arabia.		the sample (256/442, 71.9%)./		Despite the number of respondents who reported receiving medical information through social media, less than one-fifth admitted that information shared across these platforms always influenced their health decisions. Further, one-quarter of the respondents admitted to never discussing health-related information with their physicians.	/ If yes, which source do you mostly use for verification? Google 90%
Jamal et al. **2015**	to determine the online health-related information–seeking behaviour among adult type 2 diabetic patients in the Middle East and the impact of their online health-related information–seeking behavior on their self-care activities.	cross-sectional survey conducted on a convenience sample of adult Saudi male and female patients diagnosed with type 2 diabetes in an outpatient and inpatient setting at King Saud University Medical City, Riyadh, Saudi Arabia, from February 28 to the end of March 2013.	344	Of the 344 diabetes patients who were interviewed, 255 (74.1%) were males. The overall mean age of participants was 53.5 (SD 13.8) years (males: mean 54.2, SD 14.1, range 16-84 years; females: mean 51.5, SD 12.9, range 19-80 years). Similarly, Internet use for health-related information was higher among younger participants. All females (23/23, 100%) who were already using the Internet in general were also using it to seek health-related information, whereas only	with a mean search frequency of 6.4 (SD 9.9) times per month and a median of 2 (IQR 1-5) times per month (Table 2). / Frequency of use per month (n134)	The most frequent website used by study participants was Google (48/96, 50%) followed by Twitter (25/96, 26%); the Saudi Charitable Association of Diabetes and Wikipedia shared the same percentage (18/96, 19%) (Figure 4). The majority of online health-related information seekers were searching for general health knowledge (64/96, 67%) followed by treatment of health problems (47%, 45/96) (Table 2). Whereas for diabetes-related information, the primary topics the participants were looking for	

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
				65.8% (73/111) of male participants who were already using Internet in general were also using it for health-related information (phi –0.286391, P<.001)	0-5 times 75 (55.9) 6-10 times 8 (6.0) ≥11 times 13 (9.7)	were related to therapeutic diet for diabetes and symptoms of diabetes, followed by diabetes treatment and causes of diabetes (Table 3). Most of the online health-related information seekers (89/96, 93%) reported positive change in their behaviours after seeking online health information. / The current findings also show that majority of the participants search only in Arabic. A greater number of participants were searching in Arabic, which is the native language in Saudi Arabia, whereas only 45% (43/96) of the health-related information seeker participants searched in both Arabic and English	
Khudair & Aloshan **2015**	to investigate motivations for the usage of social media by Saudi parents of autistic children.	In February 2014, there was a survey (printed and online) conducted among 71 parents and relatives of autistic children (83.1 % female) in Saudi Arabia. Participants were recruited through the Saudi Autistic Association in Riyadh, Saudi Arabia and through Twitter, Both	71			Participants are using Google+ more than other social media. Among the plausible explanations for these findings is that Facebook allows people to share with friends already reached in someway and Twitter connects users with a much larger network of people they do not know. On the other hand, Google+ is completely	The results of the present study suggest that autism related information available online is not sufficient for participants‘ information needs./ Information found in social media about Autism is sufficient for my 26.76% 26.76% 46.48%

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
		(printed and online) copies were filled in anonymously.				different in that users can circle with whom they wish to share particular infonnation. For example, circles could be created for Autism, Autism Parents, Has Autism, Autism Charities, and so on, because Google+ also gives online support groups and communities the potential to build and grow enormously compared to the other social media. In general, a quarter (26.92%) of the participants used social media to find answers to medical issues related to autism and (25.38%) to communicate with a specialist for autism treatment. Only 13.08% stated that their purpose of social media usage was to follow the writings of a specific autism specialist./ The results of the present study also suggest that reliable sources of information such as doctors and specialists do have accounts on social networks; this indicates the uptake of health professionals to the Internet. On the other hand, fake accounts hinder participants' use of social	information need./ Information available in social media about Autism is credible and reliable. 40.85% 53.52% 5.63%/

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
						media as an information source, with almost 53% of them stating that fake accounts reduce their use of social media for health information.	
Marar et al. **2019**	to assess the use of social media networks in Saudi patients and their companions for obtaining health information and to describe their perceptions, attitudes, and practices.	cross-sectional study conducted between January and March 2018 at King Fahad Medical City (KFMC), Riyadh, Saudi Arabia. The inclusion criteria consisted of Saudi adult patients and their companions seen in KFMC outpatient clinics. The participants should be literate in Arabic and use the internet regularly (daily).	374	of education was found to be significantly associated with the use of social media (p=0.003).			The participants' perception of social media usage is presented in Table 2. A 81.4% of the participants' believe the health information available in social media increased their health awareness. Approximately 50% think the obtained health information from social media is reliable, while 73.3% claimed that the information acquired has an influence on their health status./ The level of online health information was satisfactory in approximately 80% of the respondents. Twenty-seven percent of participants (n = 104) who used social media for medical consultations claimed that the online

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
							information provided by physicians is useful.
زينب, أبو طالب بنت متنى **2013**	To know the extent of the Saudi public's reliance on social media networks as a source of health information compared to other sources, the cognitive and behavioral influences associated with this dependence, and the level of trust and confidence in these networks	Survey Methodology: The questionnaire was applied to a sample of 299 respondents from the city of Riyadh using the Random Sample method. The questionnaire was distributed in hospitals, clinics, universities and major markets with 100 questionnaires for each entity in Riyadh		Female 35.5%, there was a significant difference between males and females's results; females were more relying on media platforms as a whole.		The level of reliance on and the usage of social media as a source of health information: YouTube 27.4% always, 27.1% sometimes. Twitter 29.1% always, 19.4 sometimes. Facebook 15.4 always, 28.4 sometimes.	The level of trust in social networks as a source of health information: YouTube 8.7% I trust it strongly, 39.8% I trust it somewhat. Twitter 9.7% I trust it strongly, 33.8% to some extent. Facebook 2.7% strongly, 32 .1% to some extent. The results indicate that the level of trust is still low, and ranges between (I do not know) and (I do not trust it) and it was YouTube that received the best rating in the trust scale.

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
Alghanim, 2010	explore personal and health-related factors that are likely to explain the use of the Internet as a preferred source of health information.	cross-sectional survey This is a cross-sectional survey conducted to explore the patients' use of the Internet for health information. Riyadh was divided into five geographical locations, From each location two primary healthcare centers were selected by simple random sampling. In each PHC center, a random sample of 100 adult patients (50 males and 50 females) was selected using systematic random sampling.	963	Respondents were predominantly young of age averaging 35.43 ±12.9 years (range, 18-68 year). Males comprised 52.0% of the sample. The vast majorities of respondents were Saudis (67.9%), married (62.6%), currently employed (63.8%) and had a monthly income of more than SR 5,000 (56.4%). Participants who had an educational level of "high school" or above comprised of 57.6% of the study sample/ 258 (26.8%) indicated that they have "used" the Internet for health 546 information in the past three months / Those who "used" the Internet for health information were more likely to be males (= 4.323, < 0.05), younger (= 21.061, <0.001), more educated (= 19.266, < 0.001), currently in employment (= 6.623, < 0.05) and had a higher monthly income (= 8.633, < 0.05) than their counterparts who “did not use" the Internet for health information. / Similarly, patients who reported having ”chronic conditions" made a		The vast majority (79.1 %) of respondents indicated that they sought specific disease or condition. More than half (57%) of respondents noted using the Internet for general health information.	more than half (52.3%) did so to acquire more information about their health problems. A similar percentage (49.6%) reported that they did so because they were given insufficient information about their health conditions by their treating health staff. More than a quarter (25.6%) of those who searched the Internet for health information indicated that they did so because they wanted to verify information given to them and about 20% indicated that they did so because they "did not agree" with the information given to them by their treating doctors./ from 1 to 5, mean score of those who used the internet assessed its usefulness as 3.89

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
				significantly higher percentage of use of the Internet for health information than those who did not report such illnesses (= 12.944, < 0.001). Finally, patients who reported having a health illness for a longer period of time (> 3 months) made a significantly higher percentage of use of the Internet for heath information than those who reported a shorter period of time " < 3 months" (= 58.234, < 0.001).			
باعبدالله، إلهام عباس **2017**	Identify the sources of health information available through the web, and monitor the basis for its evaluation, which the Saudi citizen refers to; to obtain health information, and monitor trends towards its use, then identify the reasons for the citizen's reluctance to use it	The questionnaire was distributed over a sample of 300 individuals using the Purposeful Sampling method, to have an easier and a quicker access to the study population, especially the male category. The Snowball Sample was used.		Youth aged 20 to 29 years old ranked first with 38% from both sexes / 50% of them were males, where females occupied the largest percentage in the use of health information sources available in the web. The results indicates that the age group of 20-29 came first in using Health information sources provided through the web, as well as unemployed people which were more prone to use it.	Finding Health Information	32% of the study population use social media networks, 21.7% uses drug company websites, 15.7% take their information from health forums, 13% from government health websites, 7.3% uses doctors' health websites, and 6% relies on health blogs. The most visited social media websites for searching for health information: YouTube 41. 3% always,	71.3% of citizens indicated that taking information from the web causes them more anxiety, 2% various negative aspects such as the unreliability of the health information circulating through web, 56% find sources contradictions, 46.3% Infos do not match doctors' words, 76.3% say sources of information on the web are correct, 48.7% say the sources are reliable, 14.3% strongly agree that web is a great source to

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						35.3% sometimes, Twitter 33.3% always, 32% sometimes, WhatsApp 22.3% always, 28.3% sometimes, Instagram 21.3% always, 35% sometimes. The most visited sites to search for health information: Sites that provide information about various health issues 29.3% always, 46% sometimes. Sites that provide information about specific diseases 29.7% always, 25% sometimes.	acquire high quality information.

Author(s) Year	Aim of the study	Design	n	Characteristics of people who searched the internet	Frequency of internet searching	Type of information sought	Perception
						Sites for doctors 22% always, 45.7% sometimes.	

Appendix 4 Quality Assessment

	Author	Date	Question/ Objectives	Study Design	Subject Selection	Characteristics Described	Outcome Measures	Sample Size	Analysis Methods	Variance Estimates	Control for Confounding	Results Detail	Conclusion Support	Total score	total possible score	Rate
1	**Abdel-Latif & Saad**	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Yes	21	22	95
2	**Abu Talib**	2013	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	No	Yes	Yes	19	22	86
3	**Al Malki**	2014	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	21	22	95
4	**Al Rashed et al.**	2017	Yes	Partial	Yes	Yes	Partial	No	Partial	Yes	No	Yes	Yes	15	22	68
5	**Al-Amoudi & Abduljabbar**	2012	Yes	Yes	Yes	Yes	Partial	No	Yes	Yes	N/A	Yes	Yes	17	20	85
6	**Al-arabi**	2014	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	No	Yes	Yes	19	22	86
7	**Al-Ghamdi et al.**	2019	Yes	Yes	Partial	Yes	Partial	Partial	Yes	Yes	No	Partial	Yes	16	22	73
8	**Al-Ghareeb**	2009	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	No	Yes	Yes	18	20	90

9	**Al-Haddad et al.**	2016	Yes	Yes	Yes	Yes	Yes	No	Partial	No	No	Partial	Partial	13	22	59
10	**Al-Hakeem**	2012	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	20	22	91
11	**Al-Johany et al.**	2010	Yes	Yes	Partial	Yes	Yes	No	Partial	N/A	N/A	Yes	Partial	13	18	72
12	**Al-Lahim et al.**	2018	Yes	Partial	Partial	Yes	Yes	Yes	Partial	Yes	No	Yes	Partial	16	22	73
13	**AL-Mohaithef et al.**	2020	Yes	Partial	Yes	Yes	Partial	No	Yes	Yes	Yes	Yes	Yes	18	22	82
14	**Al-Rumaih et al.**	2017	Yes	Partial	Partial	Yes	Partial	Yes	Yes	N/A	No	Yes	Partial	14	20	70
15	**Al-Shawi et al.**	2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
16	**Al-Suroj et al.**	2018	Yes	Partial	Partial	Yes	Partial	No	Yes	N/A	N/A	Yes	Partial	12	18	67
17	**Al-Zaharani**	2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Partial	19	22	86

18	**Al-Zalabani et al.**	2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
19	**Alassiri & Alowfi**	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Partial	19	22	86
20	**Albarrak et al.**	2016	Yes	Partial	Partial	Yes	Yes	Partial	Partial	Yes	No	Yes	Yes	16	22	73
21	**Aldahash et al.**	2012	Yes	Partial	Yes	Yes	Partial	Partial	Partial	Yes	No	Partial	Partial	14	22	64
22	**Alduraywish et al.**	2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
23	**Alfahl & Alharbi**	2017	Yes	Partial	Partial	Yes	Partial	Partial	Yes	N/A	No	Yes	Yes	14	20	70
24	**Alfawaz et al.**	2018	Yes	Yes	Partial	Yes	Partial	Partial	Yes	N/A	No	Yes	Yes	15	20	75
25	**Alfayez et al.**	2018	Yes	Yes	Partial	Yes	Partial	No	Yes	N/A	No	Partial	Partial	12	20	60
26	**Alghamdi et al.**	2019	Yes	Yes	Partial	Yes	Yes	Yes	Yes	N/A	No	Yes	Yes	17	20	85

27	**AlGhamdi & Almohedib**	2011	Yes	Yes	Yes	Yes	Yes	Partial	Yes	N/A	Yes	Yes	Yes	19	20	95
28	**AlGhamdi & Moussa**	2012	Yes	Yes	Yes	Yes	Partial	Partial	Yes	Yes	Yes	Yes	Yes	20	22	91
29	**Alghamdi et al.**	2018	Yes	Partial	No	Yes	Partial	No	Partial	N/A	No	Yes	Yes	11	20	55
30	**Alghanim**	2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
31	**Alhaddad**	2018	Yes	Yes	Partial	Yes	Yes	Partial	Partial	Yes	No	Yes	Yes	17	22	77
32	**Alhaddad et al.**	2014	Yes	Yes	Partial	Yes	Yes	No	Yes	N/A	No	Yes	Yes	15	20	75
33	**Alhazzazi**	2016	Yes	Yes	Partial	Yes	Partial	Partial	Partial	N/A	N/A	Partial	Yes	13	18	72
34	**AlHilali et al.**	2016	Yes	Yes	Partial	Yes	Partial	Yes	Partial	N/A	N/A	Yes	Yes	15	18	83
35	**Almaiman et al.**	2016	Yes	Yes	Partial	Yes	Partial	Yes	Yes	No	No	Yes	Yes	16	22	73

36	**Alomi et al.**	2018	Yes	Yes	Yes	Yes	Partial	Partial	Yes	N/A	No	Yes	Yes	16	20	80
37	**Aloqaili et al.**	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A	Yes	Yes	18	18	100
38	**Alrashid**	2006	Yes	Partial	Partial	Yes	Yes	No	Yes	Partial	No	Yes	Yes	15	22	68
39	**ALrukban**	2014	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	No	Yes	Yes	18	20	90
40	**Alruwaili et al.**	2018	Yes	Yes	Yes	Yes	Partial	Partial	Yes	N/A	N/A	Yes	Yes	16	18	89
41	**AlSaadi**	2012	Yes	Yes	Yes	Yes	Partial	Partial	Yes	Yes	Yes	Yes	Yes	20	22	91
42	**Alsaihati et al.**	2018	Yes	Yes	Partial	Yes	Partial	Partial	Partial	N/A	N/A	Yes	Yes	14	18	78
43	**Alshahrani et al.**	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	No	Yes	Yes	18	20	90
44	**Alshahrani**	2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
45	**Alshalhoub**	2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	21	22	95

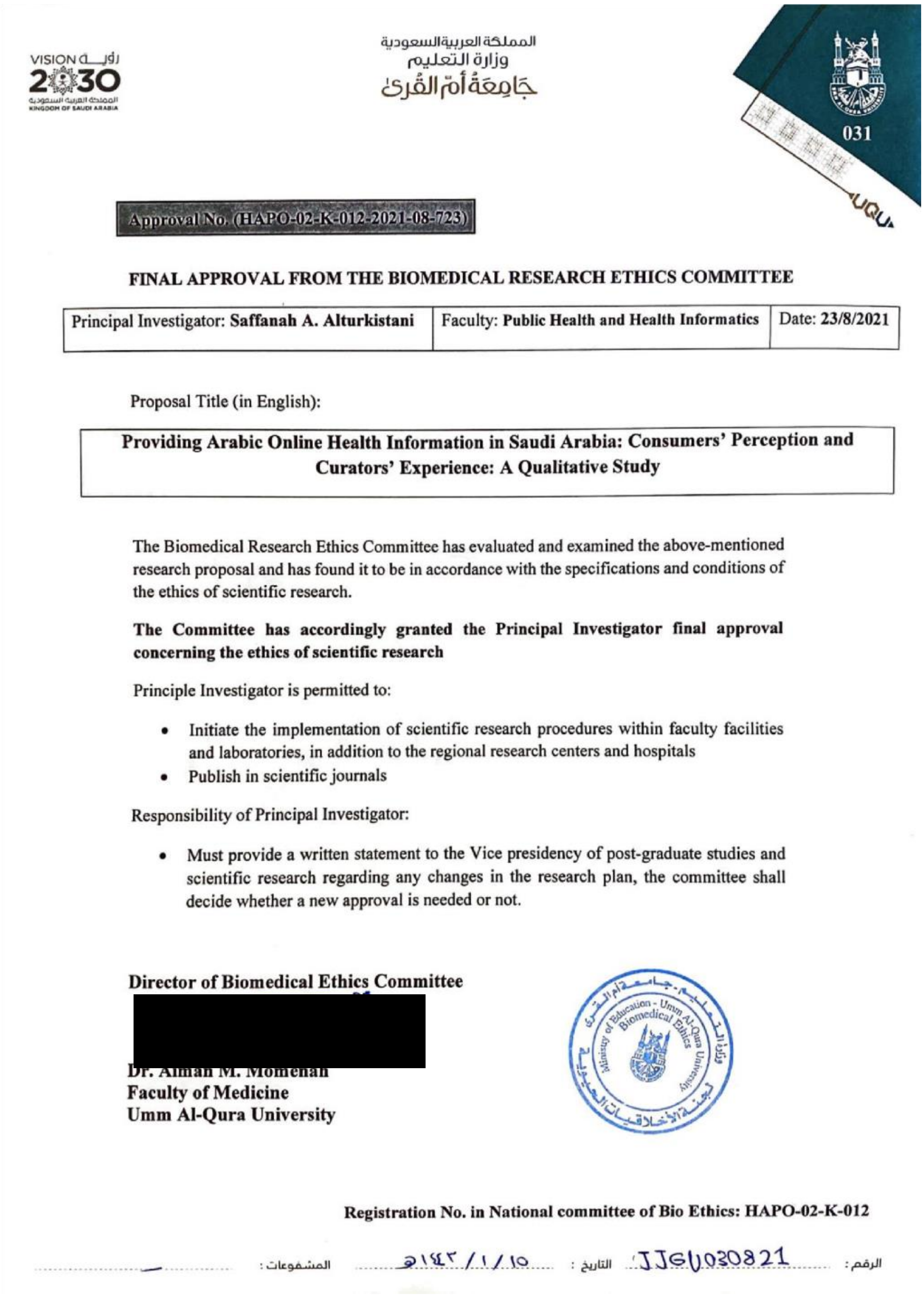
46	**Alsharidah et al.**	2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	20	22	91
47	**Alshehri et al.**	2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	No	Yes	Yes	18	20	90
48	**Alsheri et al.**	2019	Yes	Yes	Yes	Yes	Partial	Partial	Yes	N/A	N/A	Yes	Yes	16	18	89
49	**Alsiddiky et al.**	2019	Yes	Yes	Yes	Yes	Partial	Yes	Yes	N/A	No	Yes	Yes	17	20	85
50	**Alwehaibi & Almeman**	2014	Yes	Yes	Yes	Yes	Partial	Partial	Yes	Yes	No	Yes	Yes	18	22	82
51	**Alyami et al.**	2018	Yes	Yes	Yes	Yes	Partial	Partial	Yes	N/A	No	Yes	Yes	16	20	80
52	**Alzahrani & Alanzi**	2019	Yes	Yes	Yes	Yes	Yes	Partial	Partial	N/A	N/A	Yes	Yes	16	18	89
53	**Alzaidi et al.**	2018	Yes	Yes	Yes	Yes	Yes	Yes	Partial	N/A	No	Yes	Yes	17	20	85
54	**Alzhrani**	2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
55	**Awadh et al.**	2017	Yes	Yes	Yes	Yes	Partial	Yes	Yes	N/A	No	Yes	Yes	17	20	85

56	**Ba’abdullah**	2017	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	20	22	91
57	**Bahammam**	2015	Yes	Yes	Yes	Yes	Yes	Partial	Yes	N/A	No	Yes	Yes	17	20	85
58	**Bahkali et al.**	2016	Yes	Yes	Yes	Yes	Partial	Partial	Partial	N/A	No	Yes	Yes	15	20	75
59	**Basyouni et al.**	2015	Yes	Yes	Partial	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	20	22	91
60	**Bawazir et al.**	2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
61	**Bin Huwaymil et al.**	2017	Yes	Yes	Yes	Yes	Partial	Partial	Partial	Partial	No	Yes	Yes	16	22	73
62	**Bin Saleem et al.**	2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	No	Yes	Yes	18	20	90
63	**Bin Shibrayn et al.**	2018	Yes	Yes	Partial	Yes	Partial	Partial	Partial	N/A	No	Yes	Yes	14	20	70
64	**Emara et al.**	2019	Yes	Yes	Partial	Yes	Partial	Partial	Yes	N/A	No	Yes	Yes	15	20	75

65	**Ghunaim et al.**	2018	Yes	Yes	Partial	Yes	Partial	Partial	Yes	Partial	No	Yes	Yes	16	22	73
66	**Gonzales et al.**	2018	Yes	Yes	Partial	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	20	22	91
67	**Hoda**	2016	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
68	**Ibrahim & Boulos**	2006	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
69	**Ibrahim et al.**	2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partial	No	Yes	Yes	19	22	86
70	**Ibrahim et al.**	2011	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
71	**Iftikhar & Abaalkhail**	2017	Yes	Yes	Yes	Yes	Partial	Partial	Yes	N/A	No	Yes	Yes	16	20	80
72	**Imran et al.**	2016	Yes	Yes	Partial	Yes	Partial	Partial	Partial	Yes	No	Yes	Yes	16	22	73
73	**Jamal et al.**	2015	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	21	22	95
74	**Khairy et al.**	2017	Yes	Yes	Yes	Yes	Partial	Partial	Yes	Partial	No	Yes	Yes	17	22	77

75	**Khudair & AlOshan**	2015	Yes	Yes	Yes	Yes	Partial	Partial	Partial	N/A	N/A	Yes	Yes	15	18	83
76	**Mahfouz et al.**	2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes	20	20	100
77	**Mahfouz & Alghamdi**	2019	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	21	22	95
78	**Manakrwi et al.**	2018	Yes	Yes	Partial	Yes	Partial	Partial	Partial	N/A	No	Yes	Yes	14	20	70
79	**Marar et al.**	2019	Yes	Yes	Yes	Yes	Yes	Partial	Yes	N/A	No	Yes	Yes	17	20	85
80	**Murad & Rafeeq**	2016	Yes	Yes	Partial	Yes	Partial	Partial	Yes	N/A	No	Yes	Yes	15	20	75
81	**Nasr et al.**	2019	Yes	Yes	Yes	Yes	Yes	Partial	Yes	N/A	No	Yes	Yes	17	20	85
82	**Shariff et al.**	2019	Yes	Yes	Yes	Yes	Partial	Yes	Yes	N/A	No	Yes	Yes	17	20	85
83	**Siddiqui et al.**	2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	22	22	100
84	**Taha et al.**	2018)	Yes	Yes	Partial	Yes	Partial	Partial	Yes	Partial	No	Yes	Yes	16	22	73

Appendix 5 Saudi Ethical Approval



VISION رؤية 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

المملكة العربية السعودية
وزارة التعليم
جامعة أم القرى

031

UQU

Approval No. (HAPO-02-K-012-2021-08-723)

FINAL APPROVAL FROM THE BIOMEDICAL RESEARCH ETHICS COMMITTEE

Principal Investigator: **Saffanah A. Alturkistani**	Faculty: **Public Health and Health Informatics**	Date: **23/8/2021**

Proposal Title (in English):

Providing Arabic Online Health Information in Saudi Arabia: Consumers' Perception and Curators' Experience: A Qualitative Study

The Biomedical Research Ethics Committee has evaluated and examined the above-mentioned research proposal and has found it to be in accordance with the specifications and conditions of the ethics of scientific research.

The Committee has accordingly granted the Principal Investigator final approval concerning the ethics of scientific research

Principle Investigator is permitted to:

- Initiate the implementation of scientific research procedures within faculty facilities and laboratories, in addition to the regional research centers and hospitals
- Publish in scientific journals

Responsibility of Principal Investigator:

- Must provide a written statement to the Vice presidency of post-graduate studies and scientific research regarding any changes in the research plan, the committee shall decide whether a new approval is needed or not.

Director of Biomedical Ethics Committee

[redacted]

Faculty of Medicine
Umm Al-Qura University

Registration No. in National committee of Bio Ethics: HAPO-02-K-012

الرقم: JJGU030821 التاريخ: ١٠/١/١٤٤٣هـ المشفوعات: ـــ

Appendix 6 UCL ethical approval

UCL RESEARCH ETHICS COMMITTEE
OFFICE FOR THE VICE PROVOST RESEARCH

27th September 2021

Professor Fiona Stevenson
Research Department of Primary Care and Population Health
UCL

Cc:
Saffanah Adel Q. Alturkistani
Dr Fiona Hamilton
Dr Henry Goodfellow

Dear Professor Stevenson

Notification of Ethics Approval with Provisos
Project ID/Title: 20953/001: Providing Arabic Online Health Information in Saudi Arabia: Consumers' Perception and Curators' Experience: A Qualitative Study

Further to your satisfactory responses to the Committee's comments, I am pleased to confirm in my capacity as Chair of the UCL Research Ethics Committee (REC) that your study has been ethically approved by the REC until **27th September 2022.**

Approval is subject to the following conditions:

Notification of Amendments to the Research
You must seek Chair's approval for proposed amendments (to include extensions to the duration of the project) to the research for which this approval has been given. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing an 'Amendment Approval Request Form' http://ethics.grad.ucl.ac.uk/responsibilities.php

Adverse Event Reporting – Serious and Non-Serious
It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator (ethics@ucl.ac.uk) immediately the incident occurs. Where the adverse incident is unexpected and serious, the Joint Chairs will decide whether the study should be terminated pending the opinion of an independent expert. For non-serious adverse events the Joint Chairs of the Ethics Committee should again be notified via the Ethics Committee Administrator within ten days of the incident occurring and provide a full written report that should include any amendments to the participant information

sheet and study protocol. The Joint Chairs will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

Final Report
At the end of the data collection element of your research we ask that you submit a very brief report (1-2 paragraphs will suffice) which includes in particular issues relating to the ethical implications of the research i.e. issues obtaining consent, participants withdrawing from the research, confidentiality, protection of participants from physical and mental harm etc.

In addition, please:

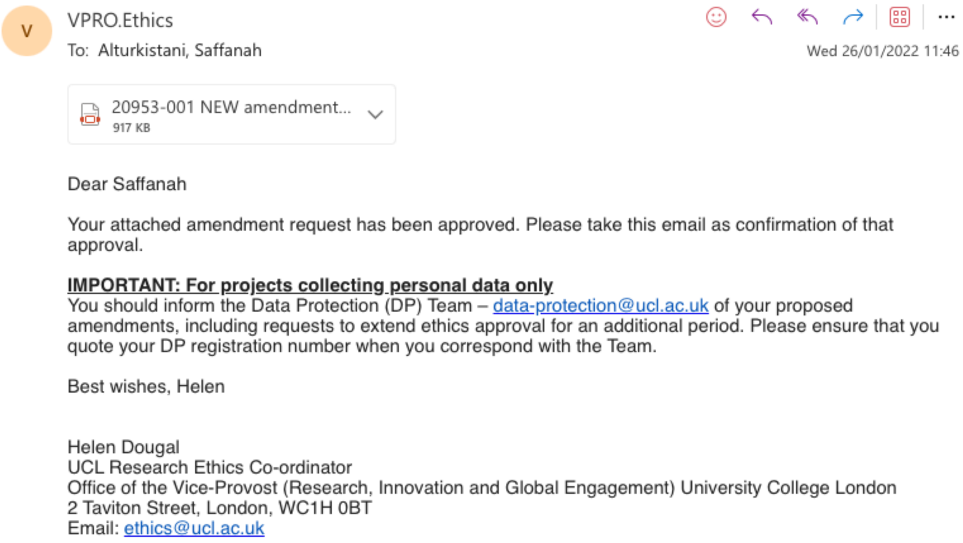
- ensure that you follow all relevant guidance as laid out in UCL's Code of Conduct for Research: https://www.ucl.ac.uk/srs/file/579
- note that you are required to adhere to all research data/records management and storage procedures agreed as part of your application. This will be expected even after completion of the study.

With best wishes for the research.

Yours sincerely

[redacted]

Professor Michael Heinrich
Joint Chair, UCL Research Ethics Committee



VPRO.Ethics
To: Alturkistani, Saffanah

Wed 26/01/2022 11:46

20953-001 NEW amendment...
917 KB

Dear Saffanah

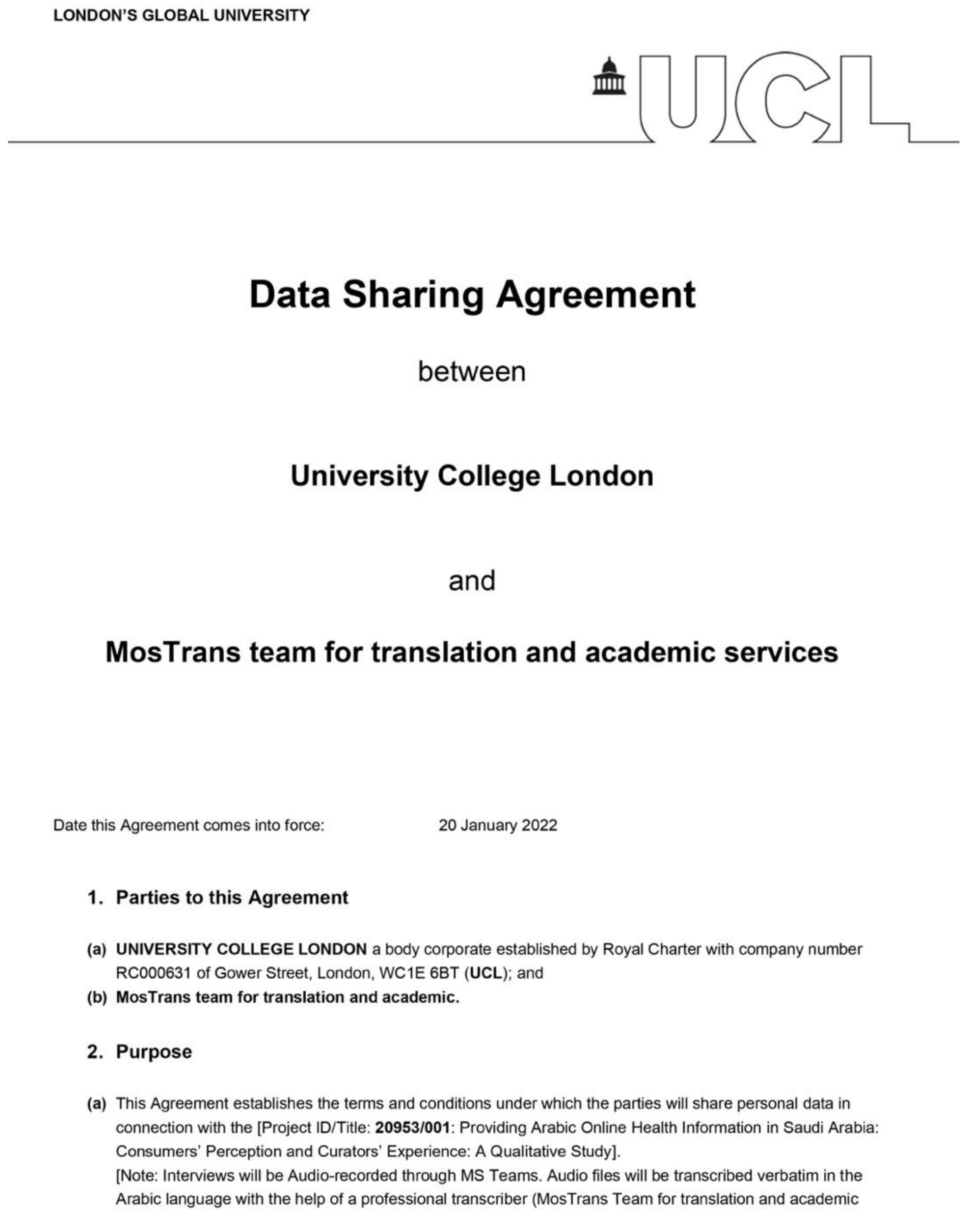
Your attached amendment request has been approved. Please take this email as confirmation of that approval.

IMPORTANT: For projects collecting personal data only
You should inform the Data Protection (DP) Team – data-protection@ucl.ac.uk of your proposed amendments, including requests to extend ethics approval for an additional period. Please ensure that you quote your DP registration number when you correspond with the Team.

Best wishes, Helen

Helen Dougal
UCL Research Ethics Co-ordinator
Office of the Vice-Provost (Research, Innovation and Global Engagement) University College London
2 Taviton Street, London, WC1H 0BT
Email: ethics@ucl.ac.uk

Appendix 7 Data sharing Agreement



LONDON'S GLOBAL UNIVERSITY

UCL

Data Sharing Agreement

between

University College London

and

MosTrans team for translation and academic services

Date this Agreement comes into force: 20 January 2022

1. Parties to this Agreement

(a) **UNIVERSITY COLLEGE LONDON** a body corporate established by Royal Charter with company number RC000631 of Gower Street, London, WC1E 6BT (**UCL**); and

(b) **MosTrans team for translation and academic.**

2. Purpose

(a) This Agreement establishes the terms and conditions under which the parties will share personal data in connection with the [Project ID/Title: **20953/001**: Providing Arabic Online Health Information in Saudi Arabia: Consumers' Perception and Curators' Experience: A Qualitative Study].
[Note: Interviews will be Audio-recorded through MS Teams. Audio files will be transcribed verbatim in the Arabic language with the help of a professional transcriber (MosTrans Team for translation and academic

services. To maintain participants' confidentiality and anonymisation, any information which could identify participants will be removed from transcripts, and all participants will be given unique ID codes]

(b) The parties shall share the personal data described in 2(a) above only in accordance with the terms of this Agreement.

3. Term and termination

(a) This Agreement shall commence on the date set out at the beginning of it and shall continue until [27th September 2022] unless terminated earlier in accordance with its terms.

(b) Either party may terminate this Agreement with immediate effect by giving written notice to the other party if that other party commits a material breach of any term of this Agreement which breach is irremediable or (if such breach is remediable) fails to remedy that breach within a period of 30 days after being notified in writing to do so;

(c) Clause 3 (Term and termination) and Clause 4 (Data protection) shall survive the termination or expiry of this Agreement, as shall any other Clause which, by its nature, is intended to survive termination or expiry.

(d) Termination or expiry of this Agreement shall not affect any rights, remedies, obligations or liabilities of the parties that have accrued up to the date of termination or expiry, including the right to claim damages in respect of any breach of the Agreement which existed at or before the date of termination or expiry.

4. Data protection

(a) In this Clause, the following terms have the following meanings:

- (i) **Controller** means a person which, alone or jointly with others, determines the purposes and means of the Processing of Personal Data;
- (ii) **Data Protection Laws** means all applicable statutes and regulations in any jurisdiction pertaining to the processing of Personal Data, including but not limited to the privacy and security of Personal Data;
- (iii) **Data Subject** means the individual to whom the Personal Data relates;
- (iv) **Personal Data** means any information relating to an identified or identifiable living individual;
- (v) **Processing** means any operation or set of operations which is performed on Personal Data or on sets of Personal Data, whether or not by automated means, and Process, Processes and Processed shall be construed accordingly; and
- (vi) **Personal Data Breach** means a breach of security leading to the accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access to, Personal Data transmitted, stored or otherwise processed.

(b) The parties acknowledge and agree that where a party Processes Personal Data under or in connection with this Agreement it alone determines the purposes and means of such processing as a Controller.

(c) In respect of the Personal Data a party Processes under or in connection with this Agreement, the party shall:

- (i) comply at all times with its obligations under the Data Protection Laws;
- (ii) notify the other party without undue delay after becoming aware of a Personal Data Breach; and
- (iii) assist and co-operate fully with the other party to enable the other party to comply with their obligations under Data Protection Law, including but not limited to in respect of keeping Personal Data secure, dealing with Personal Data Breaches, complying with the rights of Data Subjects and carrying out data protection impact assessments.

(d) The parties shall work together to ensure that each of them is able to Process the Personal Data it Processes under or in connection with this Agreement for the purposes contemplated by this Agreement lawfully, fairly and in a transparent manner and in compliance with the Data Protection Laws. This shall include but not be limited to entering into such other written agreements as may be required from time to time to enable each party to comply with the Data Protection Laws.

5. Miscellaneous

(a) No variation of this Agreement shall be effective unless it is in writing and signed by the parties (or their authorised representatives).

(b) A failure or delay by a party to exercise any right or remedy provided under this Agreement or by law shall not constitute a waiver of that or any other right or remedy, nor shall it prevent or restrict any further exercise of that or any other right or remedy. No single or partial exercise of any right or remedy provided under this agreement or by law shall prevent or restrict the further exercise of that or any other right or remedy.

(c) If any provision or part-provision of this Agreement is or becomes invalid, illegal or unenforceable, it shall be deemed modified to the minimum extent necessary to make it valid, legal and enforceable. If such modification is not possible, the relevant provision or part-provision shall be deemed deleted. Any modification to or deletion of a provision or part-provision under this Clause shall not affect the validity and enforceability of the rest of this Agreement.

(d) This Agreement constitutes the entire agreement between the parties and supersedes and extinguishes all previous agreements, promises, assurances, warranties, representations and understandings between them, whether written or oral, relating to its subject matter.

(e) Each party agrees that it shall have no remedies in respect of any statement, representation, assurance or warranty (whether made innocently or negligently) that is not set out in this Agreement.

(f) Nothing in this Agreement is intended to, or shall be deemed to, establish any partnership or joint venture between any of the parties, constitute any party the agent of another party, or authorise any party to make or enter into any commitments for or on behalf of any other party.

(g) This Agreement does not give rise to any rights under the Contracts (Rights of Third Parties) Act 1999 to enforce any term of this Agreement.

(h) This Agreement may be executed in any number of counterparts, each of which when executed shall constitute a duplicate original, but all the counterparts shall together constitute the one Agreement.

(i) This Agreement and any dispute or claim (including non-contractual disputes or claims) arising out of or in connection with it or its subject matter or formation shall be governed by and construed in accordance with English law.

(j) Each party irrevocably agrees that the courts of England and Wales shall have exclusive jurisdiction to settle any dispute or claim (including non-contractual disputes or claims) arising out of or in connection with this Agreement or its subject matter or formation.

Signed for and on behalf of **University College London**

Name (print): Saffanah Alturkistani

Job title: PhD student at Primary Care and Population Health Research Department

Date: 19 January 2022

Signed for and on behalf of **MosTrans team for translation and academic services**

Name (print): Waleed A. Malaka

Job title: CEO, MosTrans Team

Date: 19 January 2022

Appendix 8 Consumers' participants information sheet

Participant Information Sheet for consumers of Arabic Online health information (OHI) content

UCL Research Ethics Committee Approval ID Number: 20953/001

UQU Research Ethics Committee Approval ID Number: HAPO-02-K-012-2021-08-723

Title of Study: Providing Arabic Online Health Information in Saudi Arabia: Consumers' Perception and Creators' Experience: A Qualitative Study

Department: Primary Care and Population Health

Name and Contact Details of the Researcher(s):

Saffanah Alturkistani,

PhD student, eHealth Unit, Research Department of Primary Care & Population Health, University College of London, London, UK.

Phone: 07756109752

Email: saffanah.alturkistani.16@ucl.ac.uk

Prof. Fiona Stevenson, Primary Supervisor

Professor of Medical Sociology Primary Care & Population Health, University College of London, London, UK.

Email: f.stevenson@ucl.ac.uk

Invitation

'You are invited to participate in this research project.

In this information sheet, I will explain this project and what you would be asked to do. Kindly read the following information carefully and discuss it with others if you wish. I am happy to answer any questions you have. Thank you for reading this.'

What is the project's purpose?

This project aims to generate recommendations for producing Arabic online health information (OHI) for the population of Saudi Arabia by exploring the Arabic OHI consumers' use and preferences and creators' decision-making processes in creating and presenting Arabic OHI.

Why have I been chosen?

I am interested in talking to consumers of Arabic health information who live in Saudi Arabia.

Do I have to take part?

It is up to you whether or not you want to take part in my study. If you decided to take part, you would be asked to sign a consent form. You can withdraw from the study at any point up to the data analysis (2 weeks from the date of the interview) by sending an email. You do not need to provide a reason.

What will happen to me if I take part?

You will be interviewed on your own (unless you want someone with you). The interview will last for up to an hour. You will be asked some questions about your experience with Arabic OHI, your views on using social media as a source for Arabic OHI and what you like and don't like when trying to find health information in Arabic online.

I will conduct the interview, and it will be online because of the current COVID-19 pandemic. This is to ensure the safety of both yourself and me. You will receive an online invitation on your preferred contact method with the link to the meeting. We are using the secure Microsoft Teams online platform. You are required to have a good internet connection and a microphone; you can use your smartphone if you wish, but a bigger screen is preferred. You are not required to download Microsoft teams as you can enter the interview using the provided link through your internet browser.

Will I be recorded, and how will the recorded media be used?

Your interview will be video or audio recorded using (MS Teams) and saved on a UCL secure Microsoft Stream drive. Your recording will only be viewed or shared with my supervisors and deleted when I have written it up (transcribed) the data (2 weeks from the interview date). The video recordings will be transcribed by me and will be immediately deleted after the completion of transcription. I will take out any identifying information of the transcripts and use these for my analysis. The study results will be written up for my thesis, published in journals and presented at scientific conferences. No other use will be made of the data without your written permission

What are the possible disadvantages and risks of taking part?

It will vary from person to person, depending on individual experiences and personalities. Some can develop a slight discomfort answering some questions if they have had negative experiences. You can always take a break, ask for family support or skip the question that caused discomfort for you.

What are the possible benefits of taking part?

There are no immediate benefits for you as a participant. Still, with your help, we hope we can better understand the best way to provide

Arabic OHI to the people of Saudi Arabia in particular and the Arabic speaking population in general.

We are also offering a voucher for the value of 100 Riyals as a token of gratitude for your participation.

What if something goes wrong?

If you have any problem, you should let me know as soon as possible via email (saffanah.alturkistani.16@ucl.ac.uk). If I cannot help you can contact Prof Fiona Stevenson, my supervisor and the Head of the Research Department of Primary Care and Population Health (f.stevenson@ucl.ac.uk). If that is not satisfactory, you can contact the Chair of the UCL Research

Ethics Committee – ethics@ucl.ac.uk

Will my taking part in this project be kept confidential?

All data collected from you during this project will be strictly confidential. You will not be identifiable in any of the project reports, publications or conference presentations. I will use data that has had any identifying features removed for analysis, reports and publications.

No third party will handle the data as the transcription will be done by myself.

Limits to confidentiality

I have a duty to report any possible harm or danger I become aware of to the relevant authorities. I may contact your health care team if needed. I would inform you of any decisions that might limit your confidentiality.

The transcripts of the recordings will be kept on a secure drive at the University in a password protected folder for ten years; this period allows us to publish the work and go back to the data to answer researchers' questions after publication. Only I and my supervisors will have access to the transcripts.

What will happen to the results of the research project?

The results will be part of my PhD thesis and published in scientific articles and presented at national or international conferences. It will take a year to get results from this study.

13. Local Data Protection Privacy Notice

Notice:

The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data and can be contacted at data-protection@ucl.ac.uk

This ‘local’ privacy notice sets out the information that applies to this particular study. Further details on how UCL uses participant information can be found in our ‘general’ privacy notice:

The information required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the ‘local’ and ‘general’ privacy notices.

For participants in research studies, click here

The categories of personal data used will be as follows:

Name

Gender

Health information

The lawful basis used to process your personal data will be a performance of a task in the public interest.

Your personal data will be processed following collection, and any identifying details removed when the data are transcribed. We will delete your video recordings following transcription and securely archive the anonymised transcripts at UCL for ten years.

If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at data-protection@ucl.ac.uk.

Who is organising and funding the research?

This research is sponsored by University College of London (UCL), United Kingdom, and funded by Umm Al-Qura University (UQU), Saudi Arabia.

Contact for further information

Please feel free to contact Saffanah Alturkistani (saffanah.alturkistani.16@ucl.ac.uk) or her supervisor, Prof. Fiona Stevenson (f.stevenson@ucl.ac.uk) for any further information, concerns or clarification. If you are happy to participate in this project, Thank you for reading this information sheet and considering taking part in my research study.

Appendix 9 Creator’s participants information sheet

Participant Information Sheet for creators of Arabic Online health information (OHI) content

UCL Research Ethics Committee Approval ID Number: 20953/001

UQU Research Ethics Committee Approval ID Number: HAPO-02-K-012-2021-08-723

Title of Study: Providing Arabic Online Health Information in Saudi Arabia: Consumers' Perception and Creators' Experience: A Qualitative Study

Department: Primary Care and Population Health

Name and Contact Details of the Researcher(s):

Saffanah Alturkistani,

PhD student, eHealth Unit, Research Department of Primary Care & Population Health, University College of London, London, UK.

Phone: 07756109752

Email: saffanah.alturkistani.16@ucl.ac.uk

Prof. Fiona Stevenson, Primary Supervisor

Professor of Medical Sociology Primary Care & Population Health, University College of London, London, UK.

Email: f.stevenson@ucl.ac.uk

Invitation Paragraph

'You are invited to participate in my qualitative research project. It is a part of my studies towards a PhD. In this information sheet, I will explain this project and what you would be asked to do. Kindly read the following information carefully and discuss it with others if you wish. I am happy to answer any questions you have. Thank you for reading this.'

What is the project's purpose?

This project aims to generate recommendations for producing Arabic online health information (OHI) for the population of Saudi Arabia by exploring the Arabic OHI consumers' use and preferences and creators' decision-making processes in creating and presenting Arabic OHI.

Why have I been chosen?

I am interested in talking to content creators and creators of Arabic online health information who have followings in Saudi Arabia. I either chose you because you have contributed to the Arabic OHI content in the hashtag صحتك-تهمنا#, or was recommended to me by consumers of your content.

Do I have to take part?

It is up to you whether or not you want to take part in my study. If you decided to take part, you would be asked to sign a consent form. You can withdraw from the study at any point up to the data analysis (2 weeks from the date of the interview) by sending an email. You do not need to provide a reason.

What will happen to me if I take part?

You will be interviewed on your own (unless you want someone with you). The interview will last for up to an hour. You will be asked some questions about your decision-making processes in creating Arabic OHI content. The questions will be around why you started creating content in Arabic, the type and mode of content you chose and any issues you can highlight as challenges or benefits. I will conduct the interview, and it will be online because of the current COVID-19 pandemic. This is to ensure the safety of both yourself and me. You will receive an online invitation on your preferred contact method with the link to the meeting. We are using the secure Microsoft Teams online platform. You are required to have a good internet connection and a microphone; you can use your smartphone if you wish, but a bigger screen is preferred. You are not required to download Microsoft teams as you can enter the interview using the provided link through your internet browser.

Will I be recorded, and how will the recorded media be used?

Your interview will be video recorded using (MS Teams) and saved on a UCL secure Microsoft Stream drive. Your videos will only be viewed or shared with my supervisors and deleted when I have written up (transcribed) the data (2 weeks from the interview date).

The video recordings will be transcribed by me and will be immediately deleted after the completion of transcription. I will take out any identifying information of the transcripts and use these for my analysis. The study results will be written up for my thesis, published in journals and presented at scientific conferences. No other use will be made of the data without your written permission

What are the possible disadvantages and risks of taking part?

I don't see any possible discomfort arising from the type of questions I have, but you can always take a break, ask for family support or skip the question that caused discomfort for you.

What are the possible benefits of taking part?

There are no immediate benefits for you as a participant. Still, with your help, we hope we can better understand the best way to provide Arabic OHI to the people of Saudi Arabia in particular and the Arabic speaking population in general.

We are also offering a voucher for the value of 100 Riyals as a token of gratitude for your participation.

What if something goes wrong?

If you have any problem, you should let me know as soon as possible via email

(saffanah.alturkistani.16@ucl.ac.uk). If I cannot help you can contact Prof Fiona Stevenson, my supervisor and the Head of the Research Department of Primary Care and Population Health (f.stevenson@ucl.ac.uk). If that is not satisfactory, you can contact the Chair of the UCL Research
Ethics Committee – ethics@ucl.ac.uk

Will my taking part in this project be kept confidential?

All data collected from you during this project will be strictly confidential. You will not be identifiable in any of the project reports, publications or conference presentations. I will use data that has had all identifying features removed for analysis, reports and publications. No third party will handle the data as the transcription will be done by myself.

Limits to confidentiality

I have a duty to report any possible harm or danger I become aware of to the relevant authorities. I may contact your health care team if needed. I would inform you of any decisions that might limit your confidentiality.

The transcripts of the recordings will be kept on a secure drive at the University in a password protected folder for ten years; this period allows us to publish the work and go back to the data to answer researchers' questions after publication. Only my supervisors and I will have access to the transcripts.

What will happen to the results of the research project?

The results will be part of my PhD thesis and will be published in scientific articles and presented at national or international conferences. It will take a year to get results from this study.

Local Data Protection Privacy Notice

Notice:

The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data and can be contacted at data-protection@ucl.ac.uk

This 'local' privacy notice sets out the information that applies to this particular study. Further details on how UCL uses participant information can be found in our 'general' privacy notice: The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the 'local' and 'general' privacy notices.

For participants in research studies, click here

The categories of personal data used will be as follows:

Name

Gender

The lawful basis that would be used to process your personal data will be a performance of a task in the public interest.

Your personal data will be processed following collection, and any identifying details removed when the data are transcribed. We will delete your video recordings following transcription and securely archive the anonymised transcripts at UCL for ten years.

If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at data-protection@ucl.ac.uk.

Who is organising and funding the research?

This research is sponsored by University College of London (UCL), United Kingdom, and funded by Umm Al-Qura University (UQU), Saudi Arabia.

Contact for further information

Please feel free to contact Saffanah (saffanah.alturkistani.16@ucl.ac.uk) or her supervisor, Prof. Fiona Stevenson (f.stevenson@ucl.ac.uk) for any further information, concerns or clarification. If you are happy to participate in this project, Thank you for reading this information sheet and considering taking part in my research study.

Appendix 10 Consumers consent form sample.

Please complete this form after reading the Information Sheet or after you have listened to an explanation about the research.

Title of Study: Providing Arabic Online Health Information in Saudi Arabia: Consumers' Perception and Creators' Experience: A Qualitative Study.

Department: Primary Care and Population Health

Name and Contact Details of the Researcher(s):
Saffanah Alturkistani, PhD student Primary Care & Population Health,
eHealth Unit, University College of London,
London, UK.
Phone: +44 7756109752, +966 500188055
Email: saffanah.alturkistani.16@ucl.ac.uk

Supervisors:
Prof. Fiona Stevenson
Dr Fiona Hamilton
Dr Henry Goodfellow

Name and Contact Details of the UCL Data Protection

This study has been approved by UCL Research Ethics Committee: Project ID: 20953/001

Umm Al Qura University Ethics committee: project ID: HAPO-02-K-012-2021-08-723

Thank you for considering taking part in this research. If you have any questions arising from the Information Sheet or explanation that was already given to you then please ask the researcher before deciding whether to join in. You can print a copy of this Consent Form to keep and refer to at any time.

I confirm that I understand that by ticking each box below, I consent to this element of the study. I understand that it will be assumed that unticked boxes mean that I DO NOT consent to that part of the study. I understand that by not giving consent for any one element, I may be deemed ineligible for the study.

- ☐ I meet the inclusion criteria and confirm that I have read and understood the Information Sheet for the above study. I have had an opportunity to consider the information and what will be expected of me. I have also had a chance to ask questions which have been answered to my satisfaction

☐ I agree to take part in the individual online video-recorded interview.

☐ I consent to participate in the study. I understand that my personal information (name, gender) will be used for the purposes explained to me. I understand that according to data protection legislation, ‘public task’ is the lawful basis for processing.

☐ I understand that my information will only be used for this project

☐ I understand that all personal data that might carry a risk of identification will be removed and that all efforts will be made to ensure I cannot be identified

☐ I understand that my data gathered in this study will be stored anonymously and securely, and it will not be possible to identify me in any reports nor publications.

☐ I understand that my information may be subject to review by responsible individuals from the University for monitoring and audit purposes.

☐ I understand that my participation is voluntary and that I am free to withdraw before the analysis of my data without giving a reason (2 weeks from the interview date).

☐ I understand the potential risks of participating and the support available to me should I become distressed during the course of the research.

☐ I understand there are no direct benefits to myself from participating, but the results will help people like me in the future.

☐ I understand that the data will not be made available to any commercial organisations.

☐ I understand that I will not benefit financially from this study or from any possible outcome it may result in in the future.

☐ I consent to my interview being video or audio recorded and understand that the recordings will be:

- Stored temporarily on UCL secure drive and a password-protected folder.
- Viewed and shared with the research team only.
- Not shared with any third party.
- Transcribed by the research team.
- Destroyed after transcription.

☐ I am aware of who I should contact if I wish to log a complaint.

☐ I voluntarily agree to take part in this study.

☐ I understand that anonymised transcripts of my data will be stored in UCL secure drive for ten years

☐ I wish to receive a summary of the findings

If you have any concern that cannot be resolved by the researcher, please contact

Prof. Fiona Stevenson, Primary Supervisor
Professor of Medical Sociology Primary Care & Population Health,
University College of London, London, UK.
(f.stevenson@ucl.ac.uk)

Name of participant
Date

Appendix 11 Creators consent form sample

Please complete this form after reading the Information Sheet or after you have listened to an explanation about the research.

Title of Study: Providing Arabic Online Health Information in Saudi Arabia: Consumers' Perception and Creators' Experience: A Qualitative Study.

Department: Primary Care and Population Health

Name and Contact Details of the Researcher(s):

Saffanah Alturkistani, PhD student Primary Care & Population Health,
eHealth Unit, University College of London,
London, UK.
Phone: +44 7756109752, +966 500188055
Email: saffanah.alturkistani.16@ucl.ac.uk

Supervisors:
Prof. Fiona Stevenson
Dr Fiona Hamilton
Dr Henry Goodfellow

Name and Contact Details of the UCL Data Protection

This study has been approved by UCL Research Ethics Committee: Project ID: 20953/001

Umm Al Qura University Ethics committee: project ID: HAPO-02-K-012-2021-08-723

Thank you for considering taking part in this research. If you have any questions arising from the Information Sheet or explanation that was already given to you then please ask the researcher before deciding whether to join in. You can print a copy of this Consent Form to keep and refer to at any time.

I confirm that I understand that by ticking each box below, I consent to this element of the study. I understand that it will be assumed that unticked boxes mean that I DO NOT consent to that part of the study. I understand that by not giving consent for any one element, I may be deemed ineligible for the study.

- ☐ I meet the inclusion criteria and confirm that I have read and understood the Information Sheet for the above study. I have had an opportunity to consider the information and what will be expected of me. I have also had a chance to ask questions which have been answered to my satisfaction
- ☐ I agree to take part in the individual online video-recorded interview.
- ☐ I consent to participate in the study. I understand that my personal information (name, gender) will be used for the purposes explained to me. I understand that according to data protection legislation, ‘public task’ is the lawful basis for processing.
- ☐ I understand that my information will only be used for this project
- ☐ I understand that all personal data that might carry a risk of identification will be removed and that all efforts will be made to ensure I cannot be identified
- ☐ I understand that my data gathered in this study will be stored anonymously and securely, and it will not be possible to identify me in any reports nor publications.
- ☐ I understand that my information may be subject to review by responsible individuals from the University for monitoring and audit purposes.
- ☐ I understand that my participation is voluntary and that I am free to withdraw before the analysis of my data without giving a reason (2 weeks from the interview date).
- ☐ I understand the potential risks of participating and the support available to me should I become distressed during the course of the research.
- ☐ I understand there are no direct benefits to myself from participating, but the results will help people like me in the future.
- ☐ I understand that the data will not be made available to any commercial organisations.
- ☐ I understand that I will not benefit financially from this study or from any possible outcome it may result in in the future.
- ☐ I consent to my interview being video or audio recorded and understand that the recordings will be:
    - o Stored temporarily on UCL secure drive and a password-protected folder.
    - o Viewed and shared with the research team only.
    - o Not shared with any third party.
    - o Transcribed by the research team.
    - o Destroyed after transcription.
- ☐ I am aware of who I should contact if I wish to log a complaint.
- ☐ I voluntarily agree to take part in this study.
- ☐ I understand that anonymised transcripts of my data will be stored in UCL secure drive for ten years

☐ I wish to receive a summary of the findings

<u>If you have any concern that cannot be resolved by the researcher, please contact</u>
Prof. Fiona Stevenson, Primary Supervisor
Professor of Medical Sociology Primary Care & Population Health,
University College of London, London, UK.
(f.stevenson@ucl.ac.uk)

Name of participant
Date

Appendix 12 Consumers’ recruitment materials

All recruitment material will be in Arabic, the following is an English translation of it.

Posted on the research project social media accounts as posts and promoted posts. Also, it will be sent around in WhatsApp groups with an addition to ask for reposting it on other groups

Video ad: https://youtu.be/8I55WTdo4G0 (draft 1)
UCL and UQU logo and ethics IDs
in the background Script:

You: I got Headache! Google: Danger! See a doctor

You: My little toe hurts! Google: Danger! See a doctor

What do you think of the Arabic health content on the internet? Want to be a part of a research to improve the Arabic content on the internet for health information?

I am doing a research toward my PhD and need your stories!

If you are above 18, live in Saudi Arabia and have seen any Arabic health content on the internet

I would be excited to hear from you

Visit our research website to know more and sign up

Text under the video:

You are invited to help me understand the way you are looking for, and want to receive, Arabic online health information via an online meeting.

If you are living in KSA, are 18 or over and you have a stable internet connection.

Please visit my research website to know more and sign up

Introductory video on the website: [made by the researcher]

Hi,

Thank you for taking interest in my research and reaching my website.

My name is Saffanah Alturkistani, I am a Teaching Assistance in Umm Al-Qura University in Makkah. I am in London doing my research toward my PhD at UCL (one of the world's leading universities).

Since my time during medical school, I have been interested in enriching the Arabic health content on the internet.

This project aims to explore and understand how the people in Saudi Arabia are using the available content and what do they want and how do they think is better to approach.

To participate, you will be interviewed by me using MS teams. The interview will be done audio only or video if you prefer. It would be recorded in order to be transcribed. All recording will be deleted after the transcription. As a token for appreciation of your time and internet usage, I will give you a 100 riyal voucher which can be redeemed toward many options including donation to charities.

Please click on the 'I want to participate' icon to read the information sheet and sign the consent form. After that, you can book the suitable timeslot for you. It will give automatically send the time details to your email. If you have any questions about the process to participate and or the registration process, you can contact me through the contact me form or WhatsApp and you can book a 20 min consultation meeting.

Preview of social media Ads campaign

دعوة للمشاركة @Saaefcom · Oct 20, 2021

انت مدعوة/ة لمساعدتي في بحث الحصول على درجة الدكتوراة عن كيف نقدر نخلي المحتوى الصحي العربي الرقمي يناسبك ويعجبك؟ عبر مقابلة عن بعد.

يمكنك المشاركة إذا كنت من سكان السعودية بعمر ١٨ سنة وأكثر

زر saaef.com للتفاصيل

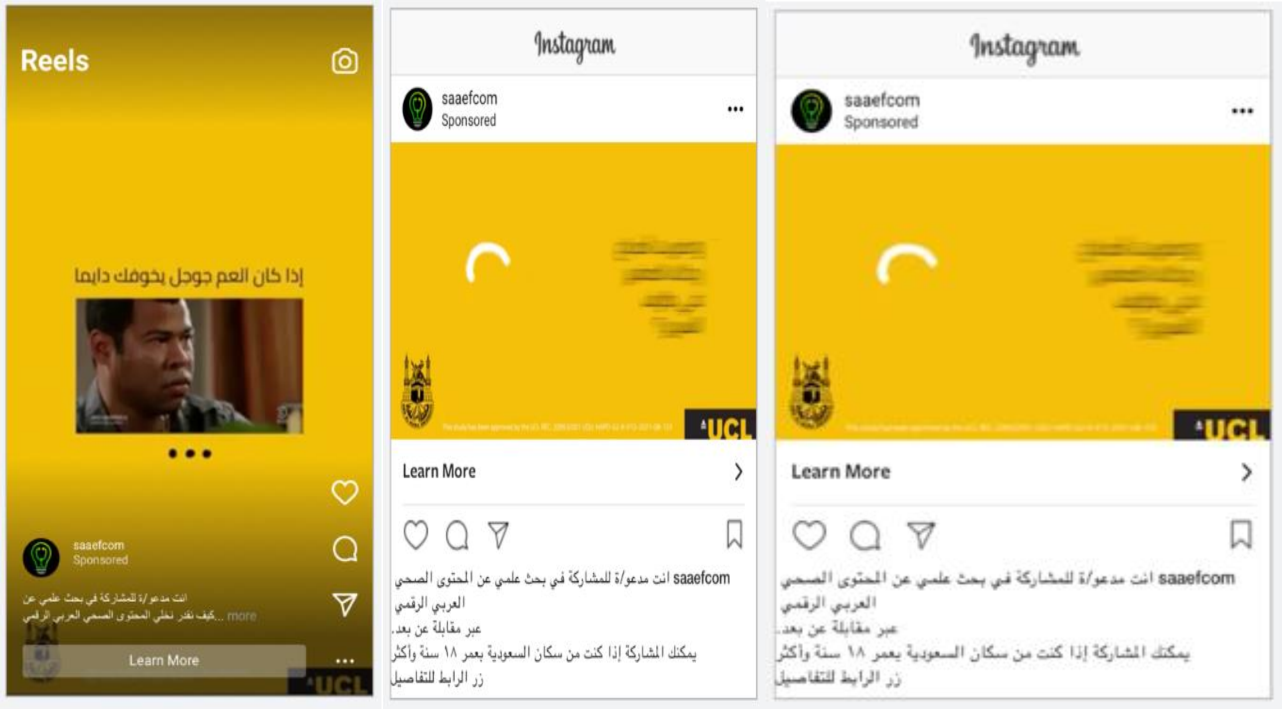
This study has been approved by the UCL REC: 20953/001 UQU: HAPO-02-K-012-2021-08-723

Figure 7 preview of Twitter Ad

دعوة للمشاركة

في بحث علمي

Figure 8 Preview of SnapChat Ad



انت مدعو/ة للمشاركة في بحث علمي عن
كيف نقدر نخلي المحتوى الصحي العربي الرقمي... more

saaefcom انت مدعو/ة للمشاركة في بحث علمي عن المحتوى الصحي
العربي الرقمي
عبر مقابلة عن بعد.
يمكنك المشاركة إذا كنت من سكان السعودية بعمر ١٨ سنة وأكثر
زر الرابط للتفاصيل

saaefcom انت مدعو/ة للمشاركة في بحث علمي عن المحتوى الصحي
العربي الرقمي
عبر مقابلة عن بعد.
يمكنك المشاركة إذا كنت من سكان السعودية بعمر ١٨ سنة وأكثر
زر الرابط للتفاصيل

Figure 9 Preview of Instagram Ads (left to right) Reels, Stories and timeline and explore

Appendix 13 Creators’ recruitment material

Creators: sent to their social media accounts

Dear … ,

My name is Saffanah, I am PhD student at University College London.

Thank you for your effort to provide health information in Arabic to the public. I am working on my PhD to explore how to optimise providing Arabic OHI in Saudi Arabia and would like you to participate in an online interview.

I am contacting you because I have seen your website/app…. or you have been recommended by consumers of your content.

If you are willing to participate in an interview about your experience producing Arabic health information online you can find information sheet and consent form in this link. You can also book a suitable time slot for the interview after the consent.

Many thanks,

Saffanah Alturkistani

PhD student at eHealth Unit at PCPH at UCL

Lecturer at Umm Al Qura University

Appendix 14 Project website

دعوة للمشاركة
في بحث علمي للحصول على درجة الدكتوراة

مرحبا بك في هذه الصفحة التعريفية للمعلومات الخاصة بالبحث
عنوان البحث: تقديم المعلومات الصحية باللغة العربية في الانترنت للمتلقين في السعودية بين تجربة
المتلقي وتجربة صانع المحتوى: دراسة نوعية
انت مدعو للمشاركة في مشروعي البحثي لنيل درجة الدكتوراة
فضلا اقرأ المعلومات في هذه الصفحة بتمعن ويمكنك مناقشتها مع الآخرين إن أردت كما سأكون
سعيدة باستقبال أسئلتك حول البحث والمشاركة فيه
شكرا لتعاونك

تفاصيل البحث

الأسئلة الشائعة

ماهو الهدف من المشروع؟

لماذا تمت دعوتي؟

هل يجب علي المشاركة؟

ماالذي سيحدث إن وافقت على المشاركة في البحث؟

Invitation to participate
In scientific research for a doctoral degree

Welcome to this introductory page for research information. Research
title: Providing health information in Arabic on the Internet to recipients in Saudi Arabia
between the experience of the recipient and the experience of the content creator: a qualitative
study
You are invited to participate in my PhD research project
Please read the information on the page carefully and you can discuss it with others if you like,
and I will also be happy to receive your questions about the research and participate in it.
Thanks for your cooperation

Search details

common questions

?What is the goal of the project

?Why was I invited

?Do I have to participate

Figure 10 Screenshot of the webpage as appears at first (auto-translation used in the second shot)

Figure 11 Screenshot of the research details in the website after expansion (auto-translation used in the second shot)

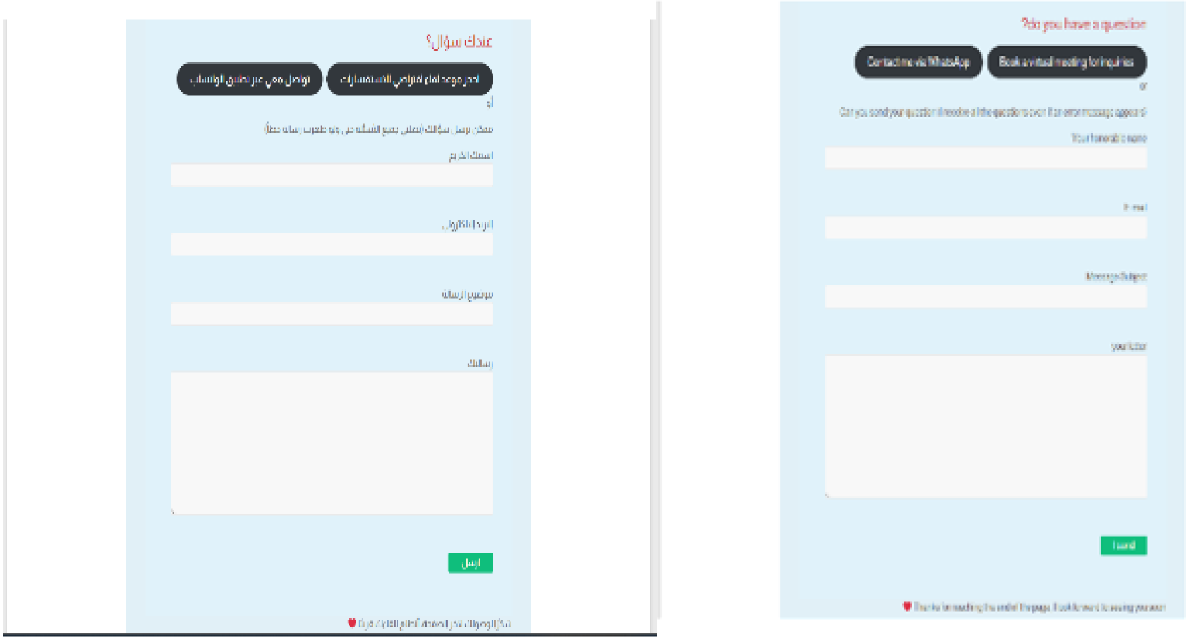


Figure 12 Screenshot of the contact me section in the website after expansion (auto-translation used in the second shot

Appendix 15 Consumers' interview topic guide

Providing Arabic Online Health Information (OHI) in Saudi Arabia: Consumers' Perceptions Interview Topic Guide (Consumers)

Introduction

- Thank you for agreeing to participate in our study.
- I would like to outline the main aim, objectives, and expectations with you (information sheet recap) and remind you that this interview will be video recorded and anonymised when transcribed.

Aim

Our aim is to generate recommendations for producing Arabic online health information for the population of Saudi Arabia.

Objectives

Explore Arabic OHI consumers' use and preferences.

Expectations

Interviews will take 40-60 minutes.

Research team

PhD student: Saffanah Alturkistani

Supervisors: Prof Fiona Stevenson, Dr Fiona Hamilton and Dr Henry Goodfellow.

Interview Questions

1. Can you tell me how old are you and how and where do you access the internet?
2. Have you ever actively searched the internet for health information?
3. Tell me about a time you searched for / received Arabic OHI
    a. What made you make the search? How did you do it? How many results did you read? How did you feel the process went? What did you do after?
    b. e.g .Platform, Author, Language (what type of Arabic they found), following a hospital visit./ doctor's appointment.

4. How do you feel about the use of social media to provide Arabic OHI?
    a. e.g. accessibility, content (depth and breadth, type of written or spoken Arabic level), ability to be archived, trust.
5. What are you looking for to use the internet as a resource for health information?

    a. Prompts: What would make you use the internet as health resource if you never did? What does a near perfect source look like or feel like? What makes a source trusted?
    b. e.g. different stages of health concerns (curiosity, symptom, after a diagnosis, before a procedure, after accessing healthcare, chronic conditions), Platform, Author, Language (what type of Arabic they found), Trust criteria (photo, name, credentials, references, institution logo).
6. Was there anything you are looking for which you couldn’t find? If so what?
    a. How do you think these needs should be addressed?
    b. Who do you think should be responsible for this?
7. Is there anything else you would like to say?

End of interview questions.

Thank you again for your valuable participation. These data will be used anonymously as previously discussed and agreed upon in the information sheet and consent. Please do not hesitate to ask any question you have. And as a thank you for your time, I will send you a link for a 100 Riyals voucher.

Appendix 16 Creator’s interview topic guide

Providing Arabic Online Health Information (OHI) in Saudi Arabia: Consumers’ Perception and Creators’ Experience: A Qualitative Study

Interview Topic Guide (Creators)

Introduction

- Thank you for agreeing to participate in our study.
- I would like to outline the main aim, objectives, and expectations with you (information sheet recap) and remind you that this interview will be video recorded.

Aim

Our aim is to generate recommendations for producing Arabic Online Health Information (OHI) for the population of Saudi Arabia by exploring the Arabic OHI consumers' use and preferences and creators' decision-making processes in creating and presenting Arabic OHI.

Objectives

1. Explore the Arabic OHI creators' decision-making processes in creating and presenting Arabic OHI.
2. Generate recommendations for producing Arabic OHI for the population of Saudi Arabia.

Expectations

Interviews will take 40-60 minutes.

Research team

PhD student: Saffanah Alturkistani

Supervisors: Professor Fiona Stevenson, Dr Fiona Hamilton and Dr Henry Goodfellow.

Interview Questions

1. Can you tell me what is your role?
2. Tell me about why and how you started to provide Arabic OHI
    a. Prompt: What made you think about this idea? How did you do it?

        e.g. Role, Platform, Language (what type of written or spoken Arabic they chose).

3. Can you describe the type of content you are providing?
    a. Prompt: Who are your target audience?

e.g. accessibility, content (depth or breadth, type of written or spoken Arabic level), ability to archived content , different stages of health concerns

4. Can you describe the process you go through to create your content?
    a. Prompts:

        - How do you choose which topic? Do you review specific resources?
        - Did you change or adjust the process? why?

        e.g. Platform, Language (what type of Arabic they use).

5. What would you regard as important measures you take to make your content valuable?
    a. Prompts: photo, name, credentials, references, attire.

6. How did this experience (creating and providing OHI) shaped you? intentionally or unintentionally?
7. What issues do you highlight as challenges about providing / creating Arabic health content?
    a. How do you think these needs should be addressed?
    b. Do you have a person or an entity in mind who should be the one responsible for this?
8. Is there anything else you would like to say?

End of interview questions.

Thank you again for your valuable participation. These data will be used anonymously as previously discussed and agreed upon in the information sheet and consent. Please do not hesitate to ask any question you have. And as a thank you for your time, I will send you a link for a 100 Riyals voucher.

Appendix 17 Social media advertisement cost and return.

	Budget	Clicks	Participants	Actual cost
SnapChat	£55	269	6	£51.18
Twitter	£50	36	1	£43.58
Instagram	£50	73	2	£32.17
WhatsApp	£0	189	17	£0

Appendix 18 Story of consumers

Story of participants

Participants will search the internet for health information when prompted with symptoms, event or diagnosis. They will start the search in Arabic in google. The search usually results in some health information specific websites which they can't decide its credibility, news articles, forum, blogs of individual experiences, translated content, or social media posts. Some would believe the information if it was repeated enough times in different sources, some would believe it when they can trust a source or an individual. Participants who had discussed what they found online with their healthcare providers received different reactions some had more meaningful conversation, but some were told off by a healthcare provider. Those who didn't discuss their findings have diverse reasons for it: "I don't believe it anyway, so I am not going to say anything", "I don't want to hurt the doctors' pride" or "I don't want to make them challenged" or "I tell my clients off". During their search, they rarely move beyond the first page of search results, they might try different keywords until they find what they are looking for. Participants whose English proficiency is good, some would switch to search in English when they found the translation for their symptom, some would switch when they are faced with how limited the content in Arabic but will need help with translators, some would go back to Arabic when they can't understand.

Participants described currently available Arabic online health information negatively. Their descriptions were ranged from "it is getting better but still need more" to "credible information? I can say it doesn't exist at all". One participant describes it as "a joke". However, "not enough" was the most common response. One participants suggested that there is a "limit" in available information in Arabic. Repetition or "copy and paste content" were mentioned as one of the downsides of Arabic content in general.

Many participants mentioned “maybe it is there but I couldn’t find it” in different forms when saying there is no credible source for health information.

Participants hope to find a credible source for health information in any form. Many prefer that form to be a free governmental website. When prompted with how you would assess credibility if not governmental, they mentioned doctors’ lead and promoted websites. Mentions of healthcare professionals name, qualification and position are important to most of them. Photo of authors are not very important to most. Content available in multiple forms (written, pictures, videos, audios) would make it easier to understand. Written content in Classic Arabic form or (white) was mentioned as a must or preferable as it will be understandable by the wider Arabic-speaking population. However, some participants preferred their local dialect to be use so it will be easier for them. For the tone of writing, Funny style, Non-judgmental tone, clear and respectful were mentioned by different participants. According to some participants, there should be different good sources or one source which is able to host different opinions even if they were conflicted as long as references were mentioned, and qualifications of authors are available. Support of medical insurance companies were mentioned to affect the credibility of the website both positively and negatively. Advertisement (Ads) on the website produced conflicting opinions, some were understanding it as a reasonable source of income to the website as long as it is not distracting and there is a lot of them, some were definitely opposed to them specially university students who were told to avoid any website with ads on it, some made the suggestion of other means of income like donation, subscription or pay for detailed information. Type of Ads available on the website might affect its credibility, offensive and adult rated Ads were an absolute no, Ads related to health sector were seen as biased or preferred, Ads not related to health were seen as cheap or preferrable. Outline of the content of a page would make it easy to choose what section consumer would like to know about. Summary of the page were mentioned to be helpful if people are trying to know about something for curiosity only. Details of the subject is important for people after diagnosis or pre-surgery. Search and categorisation of subjects were mentioned many times with different suggestions, search by body parts and then its symptoms would help them find the word for what they are feeling, categorisation by medical speciality might cause confusion since it is something some participants needs help in identifying what type of physician should they consult in case of this symptom or another, Categorisation by age group were mentioned to be more helpful.

Topics more content is needed were hormones, child health, contraception by schedule,

Participants have different opinions about the use of social media for providing health information. The use of casual regional dialects were described as “easier to understand” and “approachable”. “some posts you know it is an edit auto-translation from English and I see it as very hard to understand” one participants said. “good information that reaches me without me asking for it is a blessing” one participants describing how she felt about healthcare professionals using social media platforms for providing health information. WhatsApp was mainly described as the place for all rumours and wrong information. Search within social media platforms except YouTube is difficult and hard if you didn’t bookmark the post for future reference. “very few doctors went down to the field, the field of social media” was how one participant description of the act of posting on social media about health information.

All participants mentioned that they use the internet to find health information for themselves or their children. The few who also search as proxy of others said they do so for different reasons. “my parents can’t understand technology correctly”, “mom would believe any information she sees and can’t differentiate a good information from a bad one”, “my friend doesn’t have the time to search so I searched for her”, “I like to seek any information that would enable me to reassure my friends and family if they got a diagnosis, I will only share with them the good news”, “other people would ask me to search for them because they know I would leave no stone unturned in the search for them”, “searching the internet is a skill and they lack that skill” were some of the reasons.

There were mention of the definition of (health) and (health information) as some would define it as (medical) and some understand it to include what they describe as (healthy lifestyle) including diet and exercise information.

Appendix 19 Story of content creators

Story of curators

Different curators had different view for how they would identify themselves professionally with some includes providing information to the public online to how they introduce themselves and some would just leave it at healthcare provider.

The start of their health information provision journey was triggered by different factors. One mentioned the necessity of having a public profile after arriving back to Saudi Arabia as a consultant after a long time spent outside the country for training and deciding to practice solely at private clinic. Others mentioned previously taking part in health promotion campaigns at hospital lobby or local school level and that the internet is the next step to provide health promotion material to a wider population. Others mentioned health promotion as an integral part of the physician role to the society specially if they deal with preventable diseases. One psychologist said the internet is a way of communication with the high load of their share of the society (they mentioned something about it is now maybe 100k people for each licensed psychotherapist in Saudi Arabia). One mentioned the internet as the next step of providing information after a decade of writing newspaper columns.

Many chose social media platforms as it is less time consuming to write at and easily accessible to more people. Some chose Twitter for the 140 character limitation and the less need for expansion on the topic. Instagram was used by some because they can share their content in a video or picture format. One mentioned Instagram photo slides as the best for their content so they can manage how people would read each slide or photo. Snapchat was mentioned as the easiest to video record. Most do share the same content on all their platforms as in they record a video on SnapChat then post it on Twitter, Instagram and or YouTube. Two participants use the Podcasts as the platform of choice for easier fluid conversation.

Most share content about their speciality or subspecialty.

The choice of what topic to post about comes from a list of topics to be discussed, an encounter with a patient or client, a thought triggered by reading a new publication, a question received from the followers or a tweet in English that is worth translating.

After the choice of the topic, many would write about it from their experience without checking any references. Some would refer to as many references as they can to ensure the accuracy of the content.

The choice of the form (written, audio, video, photo or infographic) would depend on what the curator would usually do or what was the form in which followers showed most engagement according to the social media metrics.

Most mentioned simple (white) form of Arabic as the language of choice. Many said formal Arabic is more professional and better and would mention “because I like formal Arabic” as one of the reasons of using it.

For the limit of information most do have a limit on what would they provide publicly and what they would talk about in direct messages. The reason for that can be time, not everyone is interested in more and I might lose followers, it is better to keep some information to the professionals or to avoid self-diagnosing or diagnosing others.

Most would mention “anything not related to my speciality” as I would not post about. In addition, controversial topics were mentioned by the most as an example of avoided topics. Topics that need a careful assessment and to be presented carefully were usually postponed until they find a good way to discuss it or after they secure their place in the social media world. Sexual health and sexuality were mentioned as an example of avoided or postponed topics by most of whom the topic is relevant to their work except for one who decided to make it one of their important lists and she published a book about it.

When asked about what measures did they take to make their content trustworthy, most did not like the use of trustworthy content. But they would talk about how they won't post anything they are not sure about. Some mentioned posting their references for what they post. One mentioned an idea about keeping the trust of the followers because trust is always a given when talking about a personal account of a physician who have their photo and credentials on their bio on social media. Following other healthcare provider on the same speciality, being followed back by them and the retweets of each other content was mentioned as endorsement from other figures, and it would promote the trust of followers.

Widening their professional network was mentioned as one of the important perks and benefits from the experience by almost all participants. Monetary benefits were mentioned as a form of sponsorship or more private patients or clients. Positive messages from followers were regarded as the highest reward by curators if it was saving a life or preventing complication or early detection of condition.

Time and translation were mentioned as the most challenges in providing Arabic OHI. Translation material to Arabic can get easier the more experienced the curator with dealing with Saudi patients or clients. Regulation of unlicensed people who provide misinformation on social media were also mentioned as something that need to be done.

When asked about their willingness to be part of a bigger project that would provide more detailed information most were very welcoming to the idea. One mentioned the need for more details about who will get the credit of the information. Ideas about what kind of help they need from such organisation or initiatives included recording equipment, editors, translators, and tech people.