

1 **Herbal Medicine: Who Cares? The changing views on medicinal plants and their roles**  
2 **in British lifestyle**

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32 *Background:* Herbal medicines are widely used but also contentious health care products.  
33 Currently little is known about the products' place in people's healthcare strategies and  
34 their views about such products. The aims of the study are to gain insight into the public's  
35 perception of herbal medicine/ general use of herbs for health, as well as on the growing of  
36 plants for medicine.

37

38 *Methodology:* Core to the research was a survey which covered participants' views about  
39 herbal medicines. Data was collected online and from visitors at the Eden Project, as well  
40 as some other garden events. Survey responses were categorised and analysed using  
41 Qualtrics.

42

43 *Results:* Overall 408 participants participated though numbers varied across questions.  
44 Results show that herbal medicines are popular, particularly amongst the 36 to 55 year old  
45 age group. Participants mostly used herbal medicines for minor-self-limiting conditions.  
46 Popular reasons for use included that plant medicines are natural and have fewer side  
47 effects, as well as for a few a changing relationship with conventional medicines. Around a  
48 third of participants grew their own plants for health care.

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50 *Conclusion:* This is the first larger UK-based survey indicating a wide use of such products,  
51 and it is therefore recommended that there is an increase in quality control and wider  
52 regulation. Access to high quality products should be prioritised.

53

## 54 **Introduction**

55 Globally herbal medicines are used, and it is well known that North American and  
56 European countries have a large and steadily growing market for such products (e.g.  
57 IPSOS-Mori 2008, Mintel, 2009). It is also well known that such usage is widespread in  
58 migrant communities for example in the UK (Bhamra, et al., 2017) or Germany (Ceuterick  
59 et al. 2008). Increased migration across the world has spread traditional knowledge from

60 various cultures and through expatriate communities, resulting in the transfer of medicines  
61 from one medical traditions to another (for example, from Ayurvedic medicine and  
62 Traditional Chinese Medicine) (Coulter & Willis, 2004) .

63 However, these are specialized segments of a society and it remains an open question, how  
64 such resources are used by a wider population. The UK Parliament has acknowledged the  
65 increasing importance of ‘complementary and alternative medicine’ (CAM) across the  
66 Western world. However, there is limited data on their use specifically for the UK  
67 (Applequist, 2004). These are choices with regards to different lifestyles and also are linked  
68 on views on practices on nutrition and food. A postal survey conducted in 1998 in England  
69 showed that in the last year approximately 20.7% of adults had used herbal medicines and  
70 35.8% during their lifetimes (Thomas, Nicholl & Coleman, 2001). Other studies show that  
71 herbal medicines account for 57% of complementary medicine sales, with a 50% growth  
72 between 1995 and 2000. Statistics show that treatment with herbal medicines was one of  
73 the most rapidly increasing sectors with 2.5% of the sample indicating use in 1990,  
74 compared with 15.1% in 1997 in the UK (Ernst & White, 2000). However, these surveys  
75 are dated and were often limited methodologically highlighting the need for new research.

76 Factors that predict participants’ use of CAM in Western countries include poorer health,  
77 specifically chronic health conditions, higher education (Astin, 1999,) a life-changing  
78 experience that impacted on a person's worldview, spirituality, a commitment to the  
79 environment, personal growth, and interestingly, feminism (Ritchie, 2007). It has been  
80 postulated that the rise in CAM is due to increased anxiety about health across society  
81 (Ritchie, 2007). A national survey conducted in the USA showed that the most significant  
82 predictor of CAM use were higher education status followed by overall health status (Astin,  
83 1999).

84 The questions associated with such uses are multiple and complex. They include for  
85 example patient safety, also in the context of using multiple products especially  
86 combinations of herbal medicines with fully licensed pharmaceutical products.

87 Investigating the population of Britain that use herbal medicines is particularly interesting  
88 because all of the public has access to pharmaceuticals via the NHS, and traditional

89 knowledge of plants has somewhat been lost due to early industrialization and scientific  
90 advancements (Ritchie, 2007) as well as lack of recognition by health care professionals.  
91 On the other hand, participants who use herbal medicines do so as a step in self-care and  
92 self-management. The NHS also promotes self-care, though not directly in the form of  
93 herbal medicines “People have a key role in protecting their own health, choosing  
94 appropriate treatments and managing long-term conditions. Self-management is a term used  
95 to include all the actions taken by people to recognise, treat and manage their own health.  
96 They may do this independently or in partnership with the healthcare system.”-NHS (NHS -  
97 England, 2018). There are only a few licensed herbal products that are approved by the  
98 NHS such as senna and ispaghula for constipation, and a cannabis product for symptoms of  
99 multiple sclerosis (MacLennan & Pendry, 2011).

100 Therefore, the aim of this study has been to explore the public's knowledge, use, and  
101 sourcing of herbal medicines, as an element of changing lifestyles in a broader sample to  
102 the UK's population. Questions were designed to help understand the British public's  
103 current general use of herbal medicines in their own healthcare, to give insight into the  
104 public's perceptions of herbal medicine, to ascertain specifically what participants grow  
105 themselves as well as to gain demographic insight on who uses plant medicines. In this  
106 study we use – broadly speaking – an ethnopharmacological approach using survey  
107 techniques as a tool and more specifically an online questionnaire.

108

## 109 **Methods**

110 The questionnaire (see Supplementary Material) consisted of 27 questions divided into the  
111 following sections; “About Yourself”, “Uses of Herbal Medicines”, “Growing and  
112 Sourcing Including Commercial Sourcing”, “Your Views about Benefits and Risks” (see  
113 Supplementary Data). It has a series of multiple-choice questions, as well as scaled  
114 questions, open ended and closed questions. Multiple choice questions were chosen for  
115 speed and simplicity for the participants, so that they were more likely to answer more  
116 questions. Open ended questions were used to get more in-depth answers. Participants' who

117 did not live in Britain were excluded. An online survey was used in order to gain the largest  
118 possible number of participants. Though this may have skewed participation to younger  
119 generations, the convenience and simplicity of an online format can increase participant  
120 compliance.

121 The questionnaire is based on previous ones (e.g. Sandhu & Heinrich, 2005, Bhamra et al  
122 2017). It was developed by the authors, then piloted in a small set of 11 volunteers and –  
123 after ethical approval – distributed through a range of channels (see below)

124

125 Full ethical approval including compliance with the current data protection EU regulation  
126 was secured (1341/001) from UCL. Prior informed consent was obtained after the  
127 participant had read the participant information leaflet.

## 128 Data Collection

129 Participants were recruited by advertisements posted on social media groups. We used a  
130 network of organisations with an interest in the topic in combination with UK snowballing  
131 (Etikan, 2016). Recruitment was both online and in person mostly at The Eden Project  
132 (<https://www.edenproject.com/>) under the Pukka Herbs stall where regular tea tastings for  
133 the public is offered including discussions on herbal medicines / teas conducted by staff.

134 The face to face data gathering was conducted on an iPad online and participants were  
135 recruited directly through interacting with the public. Data was also gathered at relevant  
136 events including the British Medicine Association Open Garden event in June 2018. The  
137 survey was available online to answer for eight weeks between June and August 2018.

138 Overall there were 408 participants however some questions had lower levels of response.  
139 Due to the topic of this survey random sampling was likely to result in a low response rate.  
140 Therefore, the sample we have is an on-purpose sample often with participants likely to  
141 have more of an interest in the general topic prior. A major problem with the survey was a  
142 technical fault which meant that the last section about “attitudes towards herbal remedies”  
143 was cut out, affecting a large proportion of respondents which decreased data reliability.

## 144 Data Analysis

145 Construction and Distribution Qualtrics is a web-based platform which was used to  
146 construct and distribute the survey. Data was imported into excel for further analysis and to  
147 create graphs and tables. The data was analysed using descriptive statistics of numbers and  
148 percentages, as sample sizes were too small to use inferential statistics. Therefore  
149 generalizations should not be made beyond our data.

## 150 **Results and Discussion**

### 151 Survey Responses

152 The herbal medicine usage survey (Figure 1) was completed anonymously, and participants  
153 were only included in the analysis if they answered “Yes” when asked if they lived in the  
154 UK. Of the initial participant numbers 6.3% stated that they did not live in the UK thus  
155 their answers were excluded. After this, total responses for each question ranged between  
156 N=136 to N=408. However, when individual answers were split into categories for deeper  
157 analysis some response numbers were as low as 22. There is an element of bias with  
158 responses as participants who are already interested in herbal medicines are more likely to  
159 answer the survey, and some herbalists completed the survey which will have skewed  
160 results. Also answers mainly came from London and Cornwall where the Eden Project is  
161 located so answers are not conclusive for the whole of the United Kingdom.

162

### 163 Gender Based Analysis of Key Findings

164 Men and women sometimes showed some similar responses, for example, 7.7% of women  
165 had never used herbal remedies in comparison to 8.4% of men (N=319). In addition, 73%  
166 of women and 75% of men stated that they would like to use herbal medicines more often  
167 (N=142). Similarly, 42% of women believe that herbal medicines are effective for major  
168 conditions compared to 39% of men (N=144). These answers are symptomatic for a  
169 generally positive towards view about herbal medicines from both sexes.

170

171 However, there was a vast difference in participation between men and women: Only 93  
172 men (26.1%) answered in comparison to 263 women (73.9%). This is important as the  
173 willingness to complete the survey indicates a prior *interest* in the topic introducing an  
174 inherent bias. It could also be true that women frequent the online forums, the survey was  
175 posted on, more, and may be more willing to help. The lower number of men participating  
176 indicates less interest in herbal medicines, and also makes assessment of answers more  
177 difficult. This perpetuates previous evidence that in Britain herbal medicine use and self-  
178 care is women dominated (Thomas, Nicholl & Coleman, 2001). This may be linked to  
179 gender differences in overall health, which then impacts on attitudes towards herbal  
180 medicines specifically. For example, when considering the cognitive and motivational  
181 aspects of attitudes towards health it has been shown that being women was a strong  
182 predictor in proactivity towards health issues as well as being informed (Chylińska et al.,  
183 2017). However, as our sample size is small and statistics are only descriptive,  
184 generalisations cannot be made beyond our data.

185

186 Semi-structured interviews conducted with men between 22-59 years old showed that some  
187 men may feel ridiculed in certain circles for openly discussing potential benefits of herbal  
188 medicine as it could be seen as “sissy stuff”. This is exemplified by an interview with a  
189 millennial man from the North of England and a culturally working class background said  
190 “women are more likely [to] fall for herbal medicines and that most men would rather use  
191 real scientifically proven pharmaceuticals”. This is substantiated by data showing only 63%  
192 of men think herbal remedies are effective for minor health conditions versus 82% of  
193 women (N=144). Conclusions for a population cannot be drawn from a small series of  
194 informal interviews, but it provides perhaps a microcosmic insight into popular opinion.

195

## 196 [Age Based Analysis of Key Findings](#)

197

198 The main age groups that compared are the ones in the age range of 16 to 35 (N=194), 36  
199 to 55 (N=93) and 56+ (N=78) (Figure 1a). Overall 54% of participants were aged between

200 16 to 35; while 26% were between 36 to 55 years old and 20% were 56+. A significant  
201 source of bias of this survey was that it was online based, henceforth the younger  
202 generation were far more likely to participate.

203

204 The 36 to 55 year old age group used plant medicines most frequently with 73% having  
205 used them in the last week and only 5% never having used them (N=84). Plant medicines  
206 being most popular with this age group is also concurrent with other studies (Ipsos MORI.,  
207 2008). The 56+ group (known in sociology terms as Gen X) were the second most frequent  
208 users with 64% having used plant medicine in the last week and only 8% of them never  
209 having used them (N=61). Of the age group 16 to 35 (known as the millennial generation,  
210 with the 20 to 35 old known as Gen Y (TrendWatching, 2018)), only 40% had used herbal  
211 medicines in the past week (N=174). This may be due to a lack of interest or simply less of  
212 a need for treating relevant health conditions. Only 9% of the millennial generation had  
213 never used medicinal plants for health, and so this indicates a relevant interest in the  
214 products. Furthermore, it is likely that not using plant medicine so frequently or ever as  
215 compared to 36 to 55 year olds and ages 56+, might be due to less ill health.

216

217 When 36 to 55 year olds were asked “what if anything attracts you to herbal remedies” 68%  
218 indicated that it is because plants are “effective” (N=74). Contrastingly only 36.9% of 16 to  
219 35 (N=168), and 58% of the 56+ group (N=65) stated it’s because the plants are  
220 “effective”. Additionally, this age range is most likely to have disposable income to spend  
221 on the medicines, as when asked “what if anything attracts you to herbal remedies” 36.9%  
222 of 16 to 35 year olds (N=168) said “cheap” whereas only 7% of 36 to 55 year olds (N=74)  
223 answered this, indicating that money is less of an issue for this age group. Another  
224 significant point is that they are more likely to have more illness to treat than millennials,  
225 but still have regular activity with the internet and so are likely to see the popular media  
226 around the industry.

227

228 The 16 to 35 group showed the most interest in using more herbal medicines in the future,  
229 which is important as it could be indicative of the future use of plant medicines in the UK.



230 When asked their opinion on the statement “I would like to use more herbal remedies” 75%  
231 of 16 to 35 year olds agreed (N=85). As previously discussed, wider reading shows there  
232 has been a surge in positive media attention and popular opinion towards herbal medicine,  
233 “natural” products and “natural health” in recent years. Studies show millennial generation  
234 are more health focused as status symbols have changed and now include: experiences,  
235 health, ethical and sustainable lifestyles (TrendWatching, 2018). Fundamentally, consumer  
236 choices are increasingly being challenged (e.g. single use plastics, meat, and fast changes in  
237 fashion) as there is an increase in conscious thinking. These consumers seek to upgrade  
238 their individual quality of life and make decisions for collective benefit such as recycling,  
239 carbon footprint, and advocating positive mental health. Cultural shifts in this generation  
240 manifest in a rise in plant-based diets (veganism, vegetarianism, flexitarianism) as well as  
241 looking to natural ingredients to help with common ailments and wellbeing (Forbes.com,  
242 2018). This makes millennials, a particularly interesting generation to investigate as  
243 cultural change, lifestyles and ideologies separate this group from previous generations.

244

245 In contrast some results show that millennials were the most sceptical about the efficacy of  
246 plant medicine, as 7.06% disagreed with the statement “herbal medicines are effective for  
247 minor health conditions” (N=85) compared with 0% of 36 to 55 (N=26), and 56+ groups  
248 (N=33). Furthermore, 36.46% of 16 to 35 year olds disagreed with the statement “herbal  
249 medicines are effective for major health conditions” (N=85). Similarly 33.33% of 56+ also  
250 disagreed with the statement (N=33) and just 15.39% of 36 to 55 year olds also disagreed  
251 (N=26).

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## 255 **Uses of Herbal Medicines, Attitudes and** 256 **Regulation**

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## 258 Uses

259 Attitudes towards herbal medicines are generally very positive with 53% of participants  
260 having used them in the last week, and only 7.8% never having used them (Figure 1b). Just  
261 over half consider them to be effective for minor self-limiting diseases (see Figure 2a),  
262 while respondents are much more cautious about their use in major diseases (Figure 2b).  
263 The reasons for this positive assessment are linked most importantly to them being  
264 ‘natural’, being seen as having less side effects and being effective, as well as them having  
265 a tradition of use (Figure 2c). One person stated that they like taking herbal medicines  
266 because “It gives feeling a sense of ownership in taking care of my health, can use regularly  
267 to keep issues at bay rather than waiting for conditions to develop and then seeking medical  
268 help. Enjoyment in being able to heal myself.” In total 74% (N=142) agreed with the  
269 statement “I would like to use more herbal remedies” which confirms interest in increased  
270 medicinal plant use in the future. It indicates an interest in participants wanting to treat their  
271 health problems with other medicines not typically used or advocated by the NHS, but this  
272 would also requires changes to the health care systems approach to herbal medicines (e.g.  
273 relating to a lack of reporting on the use of such products by patients and possible herb-  
274 drug interactions). This interest in using more herbal medicines may also support the  
275 NHS’s vision of “Giving people the right care at different stages of their lives” (NHS-  
276 England,2018) and to increase patient compliance, satisfaction and therefore wellbeing.  
277 However, a risk of bias is that as this was a pilot study the sample size is not representative  
278 of the whole population.

279

280 Respondents reported that the conditions they most frequently used herbal medicines for  
281 were for sleep, to boost overall wellbeing, to aid the digestive system to boost the immune  
282 system, and for anxiety/stress (N=324) (Figure 3). Respondents also ranked the order of  
283 importance of conditions that they used herbal medicines to treat and the most important  
284 one was to ‘boost the immune system’ (44.8%), followed by for anxiety/stress (38.30%)  
285 and to help get to sleep (37.6%) (N=295). Other popular conditions include for the skin,  
286 with 8.4% using plants for conditions such as eczema, psoriasis and beauty. A further 2.2%

287 used herbs for major conditions such as cancer and post-traumatic stress disorder, and 2.4%  
288 used plants for pain management.

289

## 290 Products Used and Regulation

291 The most commonly named herbal substances used are summarised in Figure 4. The plants  
292 grown and culinary plants used in r health care are shown in Figures 6 and 7 though their  
293 importance will be discussed later. Teas (80.1%), supplements, beauty products (36%) were  
294 most commonly stated as the types of products used (Figure 4). The least popular options  
295 were registered herbal medicines (i.e. indicated by Traditional Herbal Remedies mark on  
296 the packet) (Figure 4; N=311). Additionally, 15.1% selected “other, please state” which  
297 most importantly includes essential oils, tinctures and cannabis. The lack of people buying  
298 Traditional Herbal Remedies (THR) products highlights problems with regards to  
299 appreciating the quality benefits of regulated product in the UK, as the public are largely  
300 unaware of the THR scheme. Informal interviews showed that people were unaware of how  
301 poor the quality of some products are on the market, which could perhaps be why THR was  
302 so lowly valued. When asked “how do you ensure that a herbal medicine is of good  
303 quality?” 9.9% of respondents said that they trust the supplier and 10.2% said they go by  
304 brand reputation (N=304). However only 2.3% said they look for certificates and marks.  
305 Studies have shown that unregulated products most often are of low quality e.g. Ginkgo  
306 (Booker, et al., 2016), indicating that there is a need for promoting categories of high-  
307 quality product more systematically.

308

309 People’s perspectives on herbal medicines compared to pharmaceuticals were also  
310 addressed (Figure 5). Participants were asked their level of agreement with the statement “I  
311 would use herbal medicines over conventional medicine for...” and a variety of conditions  
312 were listed in order to understand people’s preference over pharmaceuticals. Everybody  
313 who participated generally preferred to use herbal medicines over conventional medicines  
314 for all eight conditions stated and 71% agreed that “herbal remedies are safe”. In multiple  
315 conversations with participants many revealed that a mistrust towards pharmaceuticals and

316 reported side effects lead people to turn towards herbal medicines. There has been an  
317 increase in media exposure on the topic of overmedication, with programmes such as “The  
318 Doctor Who Gave Up Medicine”, and prominent public figures who are pro “de-  
319 medication” such as Dr. Ranjan Chaterjee who advocate “lifestyle prescriptions” (rather  
320 than immediately seeking pharmaceutical prescriptions) frequenting popular BBC  
321 programmes. It is well known that there is some public angst around this topic (Cohen,  
322 2018) both in informal interviews and on the surveys (Hawkes, 2017). However, this is not  
323 predominantly on the agenda for most people taking herbal medicines.

324

### 325 Growing and Sourcing

326 A majority (69.3%) did not grow their own medicinal plants for healthcare (N=322) (Figure  
327 7). Those who do, usually grow multiple medicinal plants, and of those that did grow plants  
328 64% intended to grow more (N=86). Only 9.6% of participants who do not already grow  
329 medicinal plants intend to do so in the future (N=198). Figure 7 shows there are over 20  
330 medicinal plants that can be grown in the UK. Results show that the majority of  
331 participants are also not interested in growing plants for healthcare.

332 Of the plants that participants grew themselves for health, mint was the most popular.  
333 Participants were also asked what culinary plants they use for health that they do not grow,  
334 and turmeric was shown to be the most popular spice (Figure 6). One participant answered,  
335 “This is difficult to answer, as all herbs and spices in the kitchen contribute to health care-  
336 let food be your medicine, and medicine be your food”.

337 Figure 6 shows the plants participants commonly use for healthcare including many  
338 common kitchen plants. Other medicinal plants which less than 3% of participants reportedly use  
339 include: Ashwaghandha (*Withania somnifera* (L.) Dunal), bay leaf (*Laurus nobilis* L.), chives  
340 (*Allium schoenoprasum* L.), cocoa (*Theobroma cacao* L.), elder(berry) (*Sambucus nigra* L.),  
341 fenugreek (*Trigonella foenum-graecum* L.), feverfew (*Tanacetum parthenium* (L.) Sch.Bip.),  
342 galangal (*Alpinia galangal* (L.) Willd.), green tea (*Camelia sinensis* L.), liquorice (*Liquiritia spp.*),  
343 marjoram (*Origanum majorana* L.), mustard (*Brassica napus*), rosebud (*Rosa canina* L.), star anise  
344 (*Illicium verum* Hook f.).sweet pepper/ paprika (*Capsicum annuum* L. cultivars), tarragon(*Artemisia*

345 *dracunculus* L.), triphala (*Zanthoxylum rhetsa* (Roxb.) DC.) and wormwood (*Artemisia absinthium*  
346 L.)..

347

348 Figure 7 shows widely used plants that participants commonly grow locally (often in their  
349 own garden) with 74 participants answering this question. Other species less than 3% of the  
350 participants mentioned growing include Calendula (*Calendula officinalis* L.), catnip  
351 (*Nepeta cataria* L.), echinacea (*Echinacea angustifolia* DC. and *E. spp.*), elecampane  
352 (*Inula helenium* L.), fennel (*Foeniculum vulgare* Mill.), hawthorn (*Crataegus monogyna*  
353 Jacq.), meadowsweet (*Filipendula ulmaria* (L.) Maxim. ), nettles (*Urtica dioica* L.). St  
354 John's wort (*Hypericum perforatum* L.), valerian (*Valeriana officinalis* L.), and yarrow  
355 (*Achillea millefolium* L.), Other medicinal plants mentioned only once as being grow  
356 include balm of Gilead (*Commiphora gileadensis* (L.) C.Chr.), black seed (*Nigella sativa*  
357 L.). Californian poppy (*Eschscholzia californica* Cham.), cannabis (*Cannabis sativa* L.),  
358 chili (*Capsicum annuum* L.), chives (*Allium schoenoprasum* L.), coriander (*Coriandrum*  
359 *sativum* L.), daisy (*Bellis perennis* L.), dandelion (*Taraxacum officinale* aggr. F.H.Wigg.),  
360 echinacea (*Echinacea pallida* (Nutt.) Nutt.), honeysuckle (*Lonicera japonica* Thunb.), hops  
361 (*Humulus lupulus* L.), linden (*Tilia cordata* Mill.), madder (*Rubia tinctorum* L.), marjoram  
362 (*Origanum majorana* L.), motherwort (*Leonurus cardiaca* L.), mugwort (*Artemisia*  
363 *vulgaris* L.), plantain (*Plantago spp.*), raspberry leaves (*Rubus idaeus* L. and *R. spp.*),  
364 sweet cicely (*Myrrhis odorata* (L.) Scop.), sweet violet (*Viola odorata* L.),

365

366 Horticulture therapy means spending time in nature, for example gardening. Informal  
367 interviews showed that growing plants was very therapeutic for those that participated, for  
368 the mind, body and overall wellbeing with diverse positive effects reported: increased self-  
369 esteem (Kim et al., 2003) lower levels of depression (Kim et al., 2003; Kam & Siu, 2010 ;  
370 Han et al., 2018), decreased anxiety (Kam & Siu, 2010), reduced blood pressure and  
371 improved fitness (Han et al., 2018). The Eden Project have been large advocates of social  
372 prescribing through horticulture, and their pilot study showed that over 12 weeks 94% of  
373 participants showed an increase in wellbeing which resulted in 40% drop in associated  
374 visits to GP's surgeries (Edenproject.com, 2018). Such activities have the potential to

375 alleviate many pressures from the public health system, as it works positively for both  
376 mental and physical health and the data of this study reinforces this and shows an alternate  
377 benefit to herbs.

378

379

## 380 **Conclusions**

381

382 This is a pilot study exploring the uses of herbal medicinal products and herbal substances  
383 in Britain. It offers a new perspective on the use of these products and their importance in  
384 the lifestyle of modern Britain. However, being a pilot study, there are some important  
385 limitations since the sample size was not large enough to be reflective of the UK  
386 population, and was certainly too small for specific groups such as 65+ (N=22). One of the  
387 main issues was the variance in numbers of participants for the different questions. This  
388 means a lack of consistent reliability in analysis. Another limit was the timeframe of the  
389 survey, as it was only available to answer for two months which means that it was not  
390 possible for the questionnaire to reach all the participants within the stipulated period.  
391 Furthermore, due to the small sample size, only descriptive statistics were used to interpret  
392 results as inferential statistical analysis were not suitable. The low response rates mean that  
393 one cannot generalize beyond our sample size.

394

395 Due to technical problems, some parts of the survey could only be used in a limited way.  
396 Furthermore, evasiveness in terms used throughout such as “natural” and “herbal remedies”  
397 means that participants’ answers may be less reliable, as everybody has different  
398 interpretations of these terms.

399

400 More research into the benefits of horticulture as well as how to increase this activity would  
401 be valuable for public health and people’s personal wellbeing. Another interesting point to  
402 investigate, which could perhaps have been included in this study is participants. ethnic

403 background. As this study did not focus on specific migrant communities there was no  
404 enquiry into cultural effects.

405 There is a cultural shift in attitudes with greater interest in herbal medicines developing  
406 over the years, and what has stimulated the growth in herbal product sales. Further  
407 investigation would be warranted, to also help predict future trends and usage. Finally, a  
408 very useful piece of research would be to investigate different ways of regulating herbal  
409 medicines by looking at other countries, and seeing what can be applied to the THR scheme  
410 for best quality assurance of plant medicines in Britain.

411

412 Attitudes towards herbal medicines were similar for both genders, although there were  
413 some key differences with women attitudes overall being more positive. Herbal medicine  
414 use was most popular amongst the 36 to 55 year old age group possibly because they are  
415 likely to have the most money, and health conditions suitable to treat with herbal  
416 medicines. However, it must be noted that a critique of surveys is an inevitable bias within  
417 answers, as participants are far more likely to take part if they have prior interest to the  
418 subject matter. The most popular reasons for using herbal medicines is that they are  
419 “natural” with less side effects, and overall participants preferred to use herbal medicines  
420 over pharmaceuticals. The most popular conditions for use of herbal medicines were sleep,  
421 to boost overall wellbeing, digestion and immunity and plant medicine was much more  
422 popular for minor conditions rather than major diseases. participants overall seem to trust  
423 that herbal medicines are regulated, and not many are aware of the THR scheme. This is an  
424 issue that needs to be addressed. This study was the first to investigate the public’s  
425 acceptance and interest in the regulation of herbal medicines in the UK, and it would be  
426 useful to study this further. Overall around a third of participants grew their own herbs, and  
427 it would be beneficial for members of the public as well as the NHS to encourage  
428 horticulture at home. This study investigated many facets of medicinal plant use in Britain,  
429 all of which warrant further investigation for insight into public health and future use.  
430 Therefore, this study needs to be followed up with a much larger study using the tool  
431 developed here (with some modifications).

432

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437

438 **Reference List**

- 439 Applequist, W. (2004). Medicinal Plants in Folk Tradition: An Ethnobotany of Britain &  
440 Ireland by David E. Allen and Gabrielle Hatfield. *Systematic Botany*, 29(4), 1021-1021.  
441 doi: 10.1600/0363644042451053
- 442 Astin, J. (1999). Why Patients Use Alternative Medicine: Results of a National Study.  
443 *Survey Of Anesthesiology*, 43(3), 181-182. doi: 10.1097/00132586-199906000-00061
- 444 Bhamra, S., Slater, A., Howard, C., Johnson, M., & Heinrich, M. (2017). The Use of  
445 Traditional Herbal Medicines Amongst South Asian Diasporic Communities in the UK.  
446 *Phytotherapy Research*, 31(11), 1786-1794. doi: 10.1002/ptr.5911
- 447 Booker, A., Frommenwiler, D., Reich, E., Horsfield, S., & Heinrich, M. (2016).  
448 Adulteration and poor quality of Ginkgo biloba supplements. *Journal Of Herbal*  
449 *Medicine*, 6(2), 79-87. doi: 10.1016/j.hermed.2016.04.003
- 450 Ceuterick, M., Vandebroek, I., Torry, B., & Pieroni, A. (2008). Cross-cultural adaptation in  
451 urban ethnobotany: The Colombian folk pharmacopoeia in London. *Journal Of*  
452 *Ethnopharmacology*, 120(3), 342-359. doi: 10.1016/j.jep.2008.09.004
- 453 Chylińska, J., Łazarewicz, M., Rządkiwicz, M., Adamus, M., Jaworski, M., & Haugan, G.  
454 et al. (2017). The role of gender in the active attitude toward treatment and health among  
455 older patients in primary health care—self-assessed health status and sociodemographic  
456 factors as moderators. *BMC Geriatrics*, 17(1). doi: 10.1186/s12877-017-0677-z
- 457 Cohen, D. (2018). *How our reliance on opioids may be doing more harm than good.*  
458 [online] Evening Standard. Available at: [https://www.standard.co.uk/news/uk/the-opioid-](https://www.standard.co.uk/news/uk/the-opioid-timebomb-special-evening-standard-investigation-into-the-overuse-of-prescription-a3791051.html)  
459 [timebomb-special-evening-standard-investigation-into-the-overuse-of-prescription-](https://www.standard.co.uk/news/uk/the-opioid-timebomb-special-evening-standard-investigation-into-the-overuse-of-prescription-a3791051.html)  
460 [a3791051.html](https://www.standard.co.uk/news/uk/the-opioid-timebomb-special-evening-standard-investigation-into-the-overuse-of-prescription-a3791051.html) [Accessed 6 Aug. 2018]



461 Coulter, I., & Willis, E. (2004). The rise and rise of complementary and alternative  
462 medicine: A sociological perspective. *Complementary And Alternative Medicine*.  
463 Retrieved from [https://www.mja.com.au/journal/2004/180/11/rise-and-rise-](https://www.mja.com.au/journal/2004/180/11/rise-and-rise-complementary-and-alternative-medicine-sociological-perspective)  
464 [complementary-and-alternative-medicine-sociological-perspective](https://www.mja.com.au/journal/2004/180/11/rise-and-rise-complementary-and-alternative-medicine-sociological-perspective)  
465 Edenproject.com. (2018). *Eden on Prescription, social prescribing projects - Eden Project,*  
466 *Cornwall*. [online] Available at: [https://www.edenproject.com/eden-story/our-](https://www.edenproject.com/eden-story/our-ethos/eden-on-prescription)  
467 [ethos/eden-on-prescription](https://www.edenproject.com/eden-story/our-ethos/eden-on-prescription) [Accessed 31 Aug. 2018].  
468 Ernst, E., & White, A. (2000). The BBC survey of complementary medicine use in the UK.  
469 *Complementary Therapies In Medicine*, 8(1), 32-36. doi: 10.1016/s0965-2299(00)90833-  
470 1  
471 Etikan, I. (2016). Comparision of Snowball Sampling and Sequential Sampling Technique.  
472 *Biometrics & Biostatistics International Journal*, 3(1).  
473 Forbes.com. (2018). [online] Available at:  
474 [https://www.forbes.com/sites/michaelpellmanrowland/2018/03/23/millennials-move-](https://www.forbes.com/sites/michaelpellmanrowland/2018/03/23/millennials-move-away-from-meat/#760e8e18a4a4)  
475 [away-from-meat/#760e8e18a4a4](https://www.forbes.com/sites/michaelpellmanrowland/2018/03/23/millennials-move-away-from-meat/#760e8e18a4a4) [Accessed 31 Aug. 2018].  
476 Hawkes, N. (2017). Public's distrust of medicines needs urgent action, says academy. *BMJ*,  
477 j2974. doi: 10.1136/bmj.j2974  
478 Ipsos, M.O.R.I., 2008. Public perceptions of herbal medicine. *General Public Qualitative &*  
479 *Quantitative Research. Ipsos MORI*.  
480 Kam, M., & Siu, A. (2010). Evaluation of a Horticultural Activity Programme for Persons  
481 With Psychiatric Illness. *Hong Kong Journal Of Occupational Therapy*, 20(2), 80-86.  
482 doi: 10.1016/s1569-1861(11)70007-9  
483 Kim, S.Y., Son, K.C., Jung, H.J., Yoo, J.H., Kim, B.S. and Park, S.W., 2003. Effect of  
484 horticultural therapy on functional rehabilitation in hemiplegic patients after stroke.  
485 *Journal Of The Korean Society For Horticultural Science*.  
486 MacLennan, E., & Pendry, B. (2011). The evolution of herbal medicine as an unorthodox  
487 branch of British medicine: The role of English legislation from antiquity to 1914.  
488 *Journal Of Herbal Medicine*, 1(1), 2-14. doi: 10.1016/j.hermed.2011.03.001

489 Mintel (2009). *Complementary Medicines-UK*. [online] Available at:  
 490 <https://store.mintel.com/complementary-medicines-uk-december-2009> [Accessed 7 May  
 491 2018].

492 NHS - England (2018). *NHS England » Supporting Self-Management/Self Care*. [online]  
 493 [England.nhs.uk](https://www.england.nhs.uk/ourwork/patient-participation/self-care/). Available at: [https://www.england.nhs.uk/ourwork/patient-](https://www.england.nhs.uk/ourwork/patient-participation/self-care/)  
 494 [participation/self-care/](https://www.england.nhs.uk/ourwork/patient-participation/self-care/) [Accessed 7 May 2018].

495 Ritchie, M. (2007). Use of herbal supplements and nutritional supplements in the UK: what  
 496 do we know about their pattern of usage?. *Proceedings Of The Nutrition Society*, 66(04),  
 497 479-482. doi: 10.1017/s0029665107005794

498 Sandhu, D., & Heinrich, M. (2005). The use of health foods, spices and other botanicals in  
 499 the Sikh community in London. *Phytotherapy Research*, 19(7), 633-642. doi:  
 500 10.1002/ptr.1714

501 Thomas, K., Nicholl, J., & Coleman, P. (2001). Use and expenditure on complementary  
 502 medicine in England: a population based survey. *Complementary Therapies In Medicine*,  
 503 9(1), 2-11. doi: 10.1054/ctim.2000.0407

504 TrendWatching. (2018). *POST-DEMOGRAPHIC CONSUMERISM - TrendWatching*.  
 505 [online] Available at: <https://trendwatching.com/trends/post-demographic-consumerism/>  
 506 [Accessed 31 Aug. 2018].

507

508 **Tables**

<b>Response</b>	<b>No. of participants that selected this</b>	<b>% of Participants</b>
<b>I don't know</b>	64	21.1
<b>I trust the supplier</b>	30	9.9
<b>I see if it works</b>	49	16.1
<b>Packaging</b>	5	1.6

<b>Smell, colour and taste</b>	23	7.6
<b>THR</b>	10	3.3
<b>Research</b>	27	8.9
<b>Using suppliers that use good manufacturing practice (GMP)</b>	7	2.3
<b>Brand reputation</b>	31	10.2
<b>Reviews/ word of mouth</b>	37	12.2
<b>Trial and error</b>	10	3.3
<b>Organic</b>	6	2
<b>Scientific research</b>	8	2.6
<b>Certificate marks</b>	7	2.3
<b>Cost</b>	5	1.6
<b>What additives are included</b>	13	4.3
<b>Source</b>	12	4
<b>Get it from a herbal professional</b>	5	1.6

509 **Table 1: Participants answers when asked how they know if a herbal product is of**  
510 **good or bad quality (N=304)**

511

512 **Supplementary Material**

513 **Herbal Remedies Britain**

514  
515

---

516 **Start of Block: Default Question Block**

517

518 Q58 Hello, thank you for participating in this survey. We are keen to understand people's  
519 relationship with herbal remedies in Britain and this survey asks questions about what  
520 herbs people use for health, why they use them and where they source them from.

521

522

523

524 Q41 About Yourself

525

526

527

528 Q1 How old are you ?

529  16-24 (1)

530  25-35 (2)

531  36-45 (3)

532  46-55 (4)

533  56-65 (5)

534  65+ (6)

535

536

537

538 Q2 Gender

539  Male (1)

540  Female (2)

541

542

543

544 Q57 Do you live in the UK?

545  Yes (1)

546  No (2)

547

548

549

550 Q3

551 What is the first part of your postcode?

552 \_\_\_\_\_

553

554

555

556 Q4 What is your highest degree or qualification?

557 \_\_\_\_\_

558

559

560

561 Q5

562 Where did you hear about this survey?

563  Eden Project (1)

564  Pukka Herbs (2)

565  BHMA (3)

566  Social Media (4)

567  Other, please state: (5) \_\_\_\_\_

568

569

Page Break

570

571

572 Q43

573 Uses of Herbal Remedies (A herbal remedy can be defined as any plant or plant based  
574 product used to treat or prevent ill health)

575

576

577 -----

578

579 Q7 Have you used herbal remedies in the last:

580  Week (1)

581  Month (2)

582  Six months (3)

583  Year (4)

584  Never (5)

585

586 -----

587

588 Q8 Which of the following conditions would you be likely to use herbal remedies for?  
589 Please tick all that apply:

- 590  To increase concentration (1)
- 591  To help get to sleep (2)
- 592  For increased energy (3)
- 593  To boost the immune system (4)
- 594  To aid the digestive system (5)
- 595  Anxiety/Stress (6)
- 596  Low mood (8)
- 597  Women's disorders (e.g menopause, PMS) (11)
- 598  Alkalinise the body (17)
- 599  Hangover (18)
- 600  To boost overall wellbeing (24)
- 601  Other please state: (25) \_\_\_\_\_
- 602

603 -----

604

605 Q9 Which of the above are the three most important uses from your point of view?

606 \_\_\_\_\_

607 \_\_\_\_\_

608 \_\_\_\_\_

609 \_\_\_\_\_

610 \_\_\_\_\_

611

612

613

614 Q11 How do you know whether a herbal remedy is of good or bad quality?

615

616

617

618

619 Q12 Do you use any of the following types of herbal products? Please tick all that apply

620  Beauty products (1)

621  Teas (2)

622  Supplements (3)

623  Creams (4)

624  Soaps (5)

625  Cleaning products for the house (6)

626  Registered herbal medicines indicated by THR (traditional herbal registration) logo on  
627 packet (8)

628  Herbs from a practitioner (9)

629  Other please state: (7) \_\_\_\_\_  
630

631

Page Break

632



633

634 Q44 Growing and Sourcing

635

636

637

638 Q48 Where do you source your herbal remedies? Please tick all that apply

639  Health shop (1)

640  Pharmacy (like Boots, Lloyds or Superdrug) (2)

641  Supermarket (3)

642  Other shops (4)

643  Online (5)

644  Practitioner (8)

645  Friends / neighbours / colleagues (6)

646  Market Stall (9)

647  Other please state: (7) \_\_\_\_\_

648

649

650

651 Q13 Do you grow any plants or spices for health care?

652  Yes (1)

653  No (2)

654

655

656 *Display This Question:*

657 *If Do you grow any plants or spices for health care? = Yes*

658

659 Q42

660 Please state which plants you grow, what you use them for in health care and how you

661 prepare them for use

662

663

664 \_\_\_\_\_

665

666 -----

667

668 Q56 Please state which herbs and spices you use from the kitchen for health care if you

669 use any and how you prepare them

670 \_\_\_\_\_

671

672 -----

673

674 Q15 Where did you learn to grow them/use the plants?

675  Books (1)

676  Blogs (2)

677  Herbal medicine specialists (3)

678  Doctors leaflets (4)

679  Product leaflets (5)

680  Friends and family (6)

681  Other please state (7) \_\_\_\_\_

682

683 -----

684

685 Q16 Do you plan to grow any other plants for health care? If yes please state which

686  Yes (1) \_\_\_\_\_

687  No (2)

688

689 -----



691

692 Q46 Benefits and Risks

693

694 -----

695

696 Q37 What, if anything attracts you to using herbal remedies? Please tick all that apply

697  Natural (1)

698  Cheap (2)

699  Used traditionally (3)

700  Can have less side effects (4)

701  Effective (5)

702  A single herb has more than one benefit (6)

703  Other please state: (7) \_\_\_\_\_

704  None of the above (8)

705

706 -----

707

708 Q39 Do you intend to learn more about using herbs for health care? If yes then please tick  
709 all the following sources of information that apply. I intend to learn from:

710  Books (1)

711  Blogs (2)

712  Herbal medicine specialists (3)

713  Doctors leaflets (4)

714  Product leaflets (5)

715  Friends and family (6)

716  Practitioner (8)

717  Other please state: (7) \_\_\_\_\_  
718

719 -----

720

721 Q54 Please indicate on the scale how much you agree with the following statements:  
722

723

724 -----

725 Q18 Herbal remedies are safe.

726  Strongly agree (1)

727  Agree (2)

728  Somewhat agree (3)

729  Neither agree nor disagree (4)

730  Somewhat disagree (5)

731  Disagree (6)

732  Strongly disagree (7)

733

734

---

735

736 Q19 I would like to use more herbal remedies.

737  Strongly agree (1)

738  Agree (2)

739  Somewhat agree (3)

740  Neither agree nor disagree (4)

741  Somewhat disagree (5)

742  Disagree (6)

743  Strongly disagree (7)

744

745

---

746

747 Q20 In general, herbal remedies are effective for minor health conditions

748  Strongly agree (1)

749  Agree (2)

750  Somewhat agree (3)

751  Neither agree nor disagree (4)

752  Somewhat disagree (5)

753  Disagree (6)

754  Strongly disagree (7)

755

756

---

757

758 Q21 In general, herbal remedies are effective for major diseases

759  Strongly agree (1)

760  Agree (2)

761  Somewhat agree (3)

762  Neither agree nor disagree (4)

763  Somewhat disagree (5)

764  Disagree (6)

765  Strongly disagree (7)

766

767

---

768

769 Q22 I trust herbal remedies

770  Strongly agree (1)

771  Agree (2)

772  Somewhat agree (3)

773  Neither agree nor disagree (4)

774  Somewhat disagree (5)

775  Disagree (6)

776  Strongly disagree (7)

777

778

---

779

780 Q55 I prefer to use herbal remedies over conventional pharmaceutical medicines for the  
781 following conditions (please answer each part individually):

782

783

---

784

785 Q23 *To increase concentration*

786  Strongly agree (1)

787  Agree (2)

788  Somewhat agree (3)

789  Neither agree nor disagree (4)

790  Somewhat disagree (5)

791  Disagree (6)

792  Strongly disagree (7)

793

794

---



795

796 Q24 *To help get to sleep*

797  Strongly agree (1)

798  Agree (2)

799  Somewhat agree (3)

800  Neither agree nor disagree (4)

801  Somewhat disagree (5)

802  Disagree (6)

803  Strongly disagree (7)

804

805

---

806

807 Q25 *For increased energy*

808  Strongly agree (1)

809  Agree (2)

810  Somewhat agree (3)

811  Neither agree nor disagree (4)

812  Somewhat disagree (5)

813  Disagree (6)

814  Strongly disagree (7)

815

816

---

817

818 Q26 *To boost the immune system*

819  Strongly agree (1)

820  Agree (2)

821  Somewhat agree (3)

822  Neither agree nor disagree (4)

823  Somewhat disagree (5)

824  Disagree (6)

825  Strongly disagree (7)

826

827

---

828

829 Q27 *To aid the digestive system*

830  Strongly agree (1)

831  Agree (2)

832  Somewhat agree (3)

833  Neither agree nor disagree (4)

834  Somewhat disagree (5)

835  Disagree (6)

836  Strongly disagree (7)

837

838

---

839

840 Q28 *In case of anxiety/stress*

841  Strongly agree (1)

842  Agree (2)

843  Somewhat agree (3)

844  Neither agree nor disagree (4)

845  Somewhat disagree (5)

846  Disagree (6)

847  Strongly disagree (7)

848

849

---

850

851 Q30 *Against low mood / feeling somewhat depressed*

852  Strongly agree (1)

853  Agree (2)

854  Somewhat agree (3)

855  Neither agree nor disagree (4)

856  Somewhat disagree (5)

857  Disagree (6)

858  Strongly disagree (7)

859

860

---

861

862 Q33 *For womens disorders (e.g menopause, PMS)*

863  Strongly agree (1)

864  Agree (2)

865  Somewhat agree (3)

866  Neither agree nor disagree (4)

867  Somewhat disagree (5)

868  Disagree (6)

869  Strongly disagree (7)

870

871

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872

873 Q59 Many thanks for participating, we hope you enjoyed it.

874

875 **End of Block: Default Question Block**

876

877

878