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Public views of different sources of health advice: pharmacists, social media and mobile health applications

Philip Crilly, M.Pharm., Sophia Jair, M.Pharm., Zahra Mahmood, M.Pharm., Armineh Moin Khan, M.Pharm., Aneesah Munir, M.Pharm., Irene Osei-Bediako, M.Pharm., Mustafa Samir, M.Pharm., Reem Kayyali, PhD.
School of Life Sciences, Pharmacy and Chemistry, Kingston University, United Kingdom

Mr Philip Crilly (Corresponding author)	School of Life Sciences, Pharmacy and Chemistry, Kingston University, KT1 2EE P.Crilly@kingston.ac.uk 0208 8417 6377	• Conception and design of the study • Revised the study critically • Drafting of paper • Final approval of version to be published
Ms Sophia Jair	School of Life Sciences, Pharmacy and Chemistry, Kingston University, KT1 2EE jasmine_jair@hotmail.com 07800541811	• Survey creation and data collection • Data analysis • Approval of finished work
Ms Zahra Mahmood	School of Life Sciences, Pharmacy and Chemistry, Kingston University, KT1 2EE mahmood_z@hotmail.co.uk 07572102323	• Survey creation and data collection • Data analysis • Approval of finished work
Ms Armineh Moin Khan	School of Life Sciences, Pharmacy and Chemistry, Kingston University, KT1 2EE arminehkhan@gmail.com 07930855586	• Survey creation and data collection • Data analysis • Approval of finished work
Ms Aneesah Munir	School of Life Sciences, Pharmacy and Chemistry, Kingston University, KT1 2EE aneesah_munir@hotmail.co.uk 07708836863	• Survey creation and data collection • Data analysis • Approval of finished work
Ms Irene Osei-Bediako	School of Life Sciences, Pharmacy and Chemistry, Kingston University, KT1 2EE ireneoseibediako@yahoo.co.uk 07904210446	• Survey creation and data collection • Data analysis • Approval of finished work
Mr Mustafa Samir	School of Life Sciences, Pharmacy and Chemistry, Kingston University, KT1 2EE msamiraziz@gmail.com 07463 398820	• Survey creation and data collection • Data analysis • Approval of finished work
Prof Reem Kayyali	School of Life Sciences, Pharmacy and Chemistry, Kingston University, KT1 2EE R.Kayyali@kingston.ac.uk 0208 417 2561	• Conception and design of the study • Revised the study critically • Final approval of version to be published

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ABSTRACT

Objectives. Investigating public perceptions of community pharmacists (CP) in public health and their use of social media (SM) and mobile health applications (MH apps) in that regard.

Methods. Two surveys were created. One sought public perceptions of SM and the other of MH apps for health advice. Both included a section on perceptions of the role of CPs in public health. A convenience sampling strategy, based on proximity, was used.The study population was the public (n=8,500,000) living in Greater London. The general public were recruited face-to-face in public spaces. A minimum sample (95% confidence interval/5% margin of error) of 385 was needed. Ethical approval was obtained from the university ethics committee. Responses were analysed in SPSS.

Key findings. 820/1800 (45.6%) completed one/both surveys. Respondents seek health advice primarily from GPs, followed by digital mediums and then CPs. Under 35s use digital mediums more frequently (p=0.039). Those who had used SM (41.7%) or MH apps (61.8%) for health information did not confirm its accuracy with a healthcare professional (HCP). Of those that did (MH apps=39.2%; SM=58.3%), the HCP disagreed with the information on MH apps and SM on 19.6% and 36.7% of occasions respectively. Nevertheless, 64.5% stated that if a SM page was maintained by an HCP they would use it.

Conclusions. The public are using digital mediums for health advice instead of speaking to an HCP. If CPs want to have an impact on public health they must start imbedding digital mediums into their services.

Keywords. Community pharmacy; public health; social media; digital health; mobile health applications

INTRODUCTION

The UK is facing a public health (PH) challenge. Today over 4 million people have diabetes;(1) around a quarter of the population are obese (24.3% of men and 26.8% of women);(2) and 2.5 million are living with cancer.(3) These conditions are linked to lifestyle, with lack of exercise and poor diet identified as risk factors.(4–6)

This comes at a time when the National Health Service (NHS) is facing a budget deficit leaving healthcare professionals (HCPs), including community pharmacists (CPs), trying to identify interventions that can tackle lifestyle-related health problems. Patients can access services such as smoking cessation, weight management and seasonal vaccinations from their community pharmacy.(7) However, patient perceptions of CPs role in PH are mixed. Studies (8, 9) have noted that patients view CPs as medicine experts only. One study in particular (8) concluded that CPs needed to do more to raise public awareness of the health services they offer to enhance patient perceptions of their role in this domain.

Technological advances are often cited as one of the key reasons why many are living sedentary lifestyles.(10, 11) The public appear to be unaware of the impact their lifestyle is having on their health.(12) Young people in particular are at risk, with those born during the first decade of the 21st century being nicknamed ‘digital natives’(13) - having lived their whole lives with the internet. On the other hand, technology is increasingly being investigated for its role in improving health. In fact, some studies have investigated the use of digital tools to promote physical activity;(14) healthy eating;(15) smoking cessation(16) and sexual health,(17) however, a study looking at the incorporation of behaviour change theory in these applications found that many were lacking such theory.(18) Furthermore, despite widespread use of digital mediums among the public, the literature is limited in terms of the public perceptions and use of them for health and how their spread may have influenced the attitudes of the public when seeking health advice.

STUDY AIMS

This study aimed to investigate public use and experience of community pharmacy for PH. Furthermore, it explored public views on the use of digital tools, such as social media (SM) health pages and mobile health applications (MH apps), for health advice.

METHOD

After reviewing the relevant literature,(7–9, 19–21) a survey was developed. The survey consisted of 59 questions in 4 sections: perceptions of the CP (including sources of health advice e.g. GP, CP; as well as use of and satisfaction with pharmacy health services e.g. NHS health check,(22) weight management, seasonal influenza vaccination and the minor ailments scheme(23)); perceptions of SM; perceptions of MH apps; and demographic data (no identifiable information requested). Most questions were closed, with pre-formulated answer choices. An "other" option was provided to allow respondents to enter free text answers if their preferred answer was not listed. Respondents were asked to rate sixteen attitudinal statements relating to their perceptions of the CP, SM and MH apps for health advice using a 5-point Likert scale ranging from one (strongly disagree) to five (strongly agree). Some questions required respondents to select all the options that were applicable to them and hence, upon analysis, the response rate for those questions may add up to over 100%.

The survey was internally reviewed for content validity by an expert in public and tele health and assessed for face validity by 2 colleagues. It was piloted by 30 members of the public, and, as a result, was split into two separate surveys due to the length of time taken to complete (20 minutes). Survey one consisted of 43 questions and survey two consisted of 32 questions. Each survey was divided into 3 sections with both surveys having the same sections 1 and 3: perceptions of the CP; and demographics. Section 2 was different in each survey with survey one having perceptions of SM; and survey two having perceptions of MH apps. The

new surveys were piloted by 15 members of the public and no further changes were recommended. Respondents who wanted to complete both surveys were asked to complete one full survey and then section two of the second survey. The delegated ethical approval team at Kingston University operating under the faculty ethics committee granted ethical approval for the surveys in February 2016 (1213/045).

The study population was the public (n=8,500,000) living in Greater London. The data collection aspect of this study was carried out by multiple researchers (N=6) who were each assigned a different area in Greater London to collect responses. The inclusion criterion for the study was: aged over 18 years, use SM or mobile applications (depending on the survey) and live in a Greater London post code. Anyone not meeting these criteria was not eligible to complete the surveys. A convenience sampling strategy, based on proximity to the researchers, was used to recruit participants face-to-face in town centres, shopping centres and bus stations between February and April 2016. Eligible respondents were given a participant information sheet (PIS) outlining the study objectives and reassuring them about the confidentiality of their data. As an incentive, participants who completed the survey were entered into a competition to win £30 Amazon vouchers. Completion of the survey was accepted as informed consent.

To determine if there were statistical differences in the results based on gender, age, ethnicity or education level, a minimum sample size of 385 was calculated using Raosoft(24) calculator providing a confidence level of 95%/5%. margin of error.

Responses were coded and entered into SPSS for Windows, version 23 (International Business Machines (IBM), New York). Two researchers reviewed the data for quality assurance. As the data was non-normally distributed and ordinal in nature, chi-square test was used to identify any associations between responses. Subanalyses were performed by respondents' gender, age, and ethnicity. An *A priori* level of less than 0.05 ($p<0.05$) was set as significant.

RESULTS

In total, 1000/1800 (55.6%) individuals agreed to take part in the survey with 800 refusing, however, 180 (10%) did not meet the inclusion criteria. Thus, 820 individuals completed one or both surveys (45.6% response rate). It was discovered that 29 surveys were not fully completed, therefore, these were excluded. The final sample size was: 791 for the CP section; 442 for the SM section; and 363 for the MH apps section. Respondents who completed both surveys were 14.

Respondents were mostly female, which matches Greater London and England demographics (**see tables 1 (a) and (b)**). Respondents were not representative of local and national statistics in relation to age and ethnicity, with under 35s and non-whites being over-represented.

Perceptions of the pharmacist for healthcare advice

Most (70.5% (558/791)) stated that CPs were knowledgeable on health promotion issues, however, CPs were the third preferred source of advice (18.6%, 147/791), behind the GP in first place (43.1%, 341/791) and digital and tele-mediums (DTM) in second (33.0%, 261/791). Under 35s were more likely to use DTMs (37.5%, 194/517) compared to over 35s (23.0%, 63/274) ($p<0.001$) with no noticeable differences based on gender or ethnicity.

Reasons for not prioritising CPs included: prefer to visit GP (53.3%, 343/644); prefer to use internet/websites (20.5%, 132/644); not aware that CPs gave health advice (16.8%, 108/644). Respondents who were male and non-white were more likely to prefer to visit their GP in comparison to white females ($p<0.05$).

Uptake of pharmacy services was low with NHS health check (18.5%, 146/791) being the most used service, followed by medicine use reviews (15.5%, 123/791). Females were more

likely than males to have used the NHS health check (p<0.001). Under 35s were more likely than over 35s to have used the sexual health services: chlamydia screening/treatment (p=0.03) and emergency hormonal contraception (p<0.001) while the over 35s were more likely than the under 35s to have used the medicine use review service (p=0.001), NHS health check (p=0.009) and stop smoking service (p=0.011).

The pharmacy services that respondents would be interested in using were: NHS health check (38.3%, 303/791), minor ailments scheme (30.1%, 238/791), seasonal influenza vaccination (30.1%, 238/791), and weight management (27.9%, 221/791). Females were more likely than males to use the weight management service (p=0.021). The under 35s appeared to be more open to the future use of services than the over 35s (p=0.05).

Perceptions of the use of social media for health advice

Facebook (89.8%, 397/442) was the most used SM platform followed by YouTube (65.2%, 288/442), Instagram (56.8%, 251/442) and SnapChat (47.3%, 209/442) (**see figure 1**). Males were more likely to have a Twitter account (p=0.031) while females were more likely to have one on Pinterest (p=0.006). Over 35s were more likely to have a Google+ account than under 35s (p=0.015). There were no differences in use of SM platforms by ethnicity.

Almost half (42.5%; 188/442) stated that they had used SM for health information with one-third (38.3%, 72/188) doing so on, at least, a monthly basis and over one-tenth doing so daily. The under 35s were more inclined than over 35s to use SM for such purposes (p=0.039). Google+ (41.0%, 77/188) was deemed to be the most beneficial SM platform for health information, followed by YouTube (32.4%, 61/188) and Facebook (23.4%, 44/188)**.** A respondent who preferred YouTube commented: “videos are easier to understand & much more detailed.”

Most (83.0%, 156/188) of those who had used SM for health information had found it useful (**see table 2**) with 60.1% (113/188) finding the information they were looking for within a few minutes, and one-third (33.5%, 63/188) doing so almost instantly. Only 3% (5/188) did not find what they were looking for. Of note, over two-fifths (47.3%, 89/188) did not confirm the accuracy of the information found with an HCP and nearly two thirds (62.2%, 117/188) were not aware of the sources of information used. On the occasions when respondents did speak to an HCP (64.9%, 122/188), they felt that the HCP did not agree with what they had found on over one third (42.6%, 52/122) of those occasions. In addition, nearly two-fifths (41.6%, 77/188) were unsure how to apply the information they had found to their personal situation and just over half (62.2%, 117/188) felt that using SM was confidential.

Of those respondents who had not used SM for health information (57.5%, 254/442), almost two-thirds (61.8%, 157/254) prefer to speak to an HCP, two-fifths (40.2%, 102/254) do not trust SM and almost one-fifth (18.1%, 46/254) did not feel that SM was confidential.

Nevertheless, almost two-thirds (64.5%, 285/442) stated that if a SM page was created and maintained by HCPs they would use it with previous SM users being more inclined to do so ($p<0.001$). Health topics for which the public would use SM to search for included nutrition, fitness, and weight loss (**see figure 2**).

Perceptions of the use of mobile health apps for health advice

Communication apps were used by 79.6% (289/363), followed by news (61.4%, 223/363), travel (50.4%, 183/363) and games apps (49.1%, 178/363). Under 35s were more likely to use game apps (54.4% (129/237) vs 37.3% (47/126) of over 35s ($p=0.002$)) as were those of non-white ethnicity (53.7% (117/218) vs 40.7% (59/145) of whites ($p=0.015$)).

Almost two-fifths (37.2%, 135/363) had used MH apps instead of visiting an HCP with the under 35s more likely to have done so (45.6% (108/237) vs 25.4% (32/126) for over 35s

($p<0.001$)). Nearly a quarter (22.1%, 30/135) of these uses MH apps on a daily basis and look for the following: background on a health condition (49.6%, 67/135) and answers to medical questions (42.2%, 57/135). The most popular types of health apps used were sports and fitness (74.8%, 101/135), diet and nutrition (65.9%, 89/135), and weight management (41.5%, 56/135). The under 35s were more likely to be interested in sports and fitness apps than over 35s ($p=0.041$) while females were more interested in diet and nutrition apps ($p=0.027$) and sleep cycle analysis apps ($p=0.001$) than males.

Respondents who did not use MH apps (62.8%, 228/363) cited reasons including: prefer to speak to a HCP (44.3%, 101/228), don't know which apps to use (36.4%, 83/228), and don't trust MH apps (15.8%, 36/228). On the other hand, reasons for using MH apps included: takes less time (58.5%, 79/135), more convenient (57.8%, 78/135), easier to find information (45.9%, 62/135), less embarrassing (23.7%, 32/135) and anonymity (17.0%, 23/135). Over two-thirds (68.1%, 92/135) of respondents who used MH apps were very satisfied with the process and would recommend it (**see table 2**). Over three-quarters (75.6%, 102/135) had felt that the apps were confidential and 85.2% (115/135) noted that MH apps were a convenient way to find information (**see table 2**). However, almost two-thirds (61.5%, 83/135) did not discuss the advice they had found on an MH app with an HCP. Of those that did, they felt that the HCP did not agree with the information they had found on almost one-fifth of occasions (19.2%, 16/83).

DISCUSSION

This study has identified the current use and future willingness of the public to use SM and MH tools for health advice. The public are already using these digital tools to access health information and the majority would welcome a digital health resource if it was created and maintained by an HCP. Such a resource would need to be convenient and easy to use as well

as providing anonymity. In addition, the public view their CP as being knowledgeable on health promotion issues; however, they were not the first port of call when needing health advice. Digital tools, therefore, could offer CPs an opportunity to impact PH on a much wider scale than at present.

The study had a number of limitations. Firstly, the sample demographic was not fully representative of the Greater London population in terms of age and ethnicity. As under 35s were over-represented this may have skewed the results more favourably for the use of SM and MH apps. The response rate, however, was above the minimum recommended sample size, which may be due in part to the offer of gift vouchers for survey completion. Secondly, some respondents may have mistakenly believed that the SM network Google+ was the search engine Google. This may have skewed some of the results towards this particular platform. Thirdly, the questions used to ask respondents' about their perceptions of their CP were written in a positive style that may have influenced responses.

Respondents in this study noted that they would visit their GP first followed by using DTMs for information over visiting their CP. While few had used any pharmacy PH services, many were willing to use them once they became aware of what was offered. This echoes other studies that have shown that pharmacy services are not fully utilised and are not well advertised.(25-27)

This study has identified that the public are open to the incorporation of digital health tools into pharmacy services, with younger demographics being most keen. They indicated that they found SM health pages and MH apps to be reliable, useful and convenient, a finding noted previously by Cain et al.(28) in 2010. Looking at the response rate for this study, it is interesting to note that of the 1000 people who agreed to take part in the survey only 180 were excluded This means that at least 82% used SM or MH apps. These findings mirror the Ofcom media use and attitudes 2016 survey (29) which noted that 87% of UK adults use the internet with

73% of these having a social media profile. The same study also found that 70% of UK adults have a smart phone with capacity to use mobile apps.

Just under half had used SM to search for health information but many (59.8%) were not aware of the sources of information being shared on these platforms. This combined with the fact that many did not know how to apply the information to their personal situation and did not discuss what they had found with an HCP is worrying. Thaler and Shiffman,(30) in their article about combatting false scientific information on digital mediums, emphasise the importance of those in the know correcting misinformation available online. Of note is the fact that the public felt that MH apps were more confidential than SM health pages (75.6% vs 59.4%). In addition, nearly three-fifths (58.3%) of those who used SM for health information then spoke to a HCP to confirm its accuracy. This was compared to just 38.2% who sought confirmation after using an MH app. When approached, HCPs agreed with the health information on mobile health apps more often than they did with that on SM health pages (80.4% vs 63.3%). There, therefore, appears to be an issue of trust with regard to the use of SM health pages. Some popular SM health pages are unregulated and members of the public can find it hard to decipher between those they can trust and those they cannot. On the other hand, the most popular MH apps are produced by large organisations, such as the NHS, who have the capacity to produce high quality information. Ghafoor et al.(31) noted that the public were most interested in using trusted resources, therefore, if SM is to be utilised more in healthcare, those developing such platforms need to instil trust in users by using evidence-based information. A guide is, therefore, needed for HCPs on how to design trustworthy digital resources. In addition, a guide for the public on how to identify and use these tools would also be beneficial.

There appears to be some public misconceptions about what constitutes a SM platform. Most members of the public recognise the platforms Facebook, YouTube, Twitter and

Instagram but many seem unaware of the smaller platforms like Google+. The authors believe that the most popular and beneficial SM platform for health information is YouTube. As with similar studies,(32) videos are preferred by the public when looking for information as they are often more engaging and allow for the explanation of complex topics in an easy to understand format.

Similar to other studies,(33) this study found that DTMs are becoming more popular as they offer the public a quick and confidential way to access health information without having to speak to an HCP. Of note, younger generations were particularly fond of gaming apps, suggesting that a digital health tool incorporating a game element could engage them even more. These findings are similar to those identified by Fergie et al.(34) who noted that under 35s are more receptive to getting advice online and that even the older demographics are becoming more drawn to these mediums. The ability to look for health advice on SM appears to be particularly important for those who lack offline support networks.(35)

While some research studies have expressed concerns about digital communication tools replacing face-to-face interactions,(36) the authors of this study believe that these tools will become complementary; lengthening the conversation time between patient and HCP. HCPs will, however, need to consider issues relating to e-professionalism in their online communications to ensure that they are representing their profession positively, as they would offline.(37)

CONCLUSION

The public are turning more often to DTMs when looking for health advice, instead of speaking to an HCP, as they find these to be reliable, convenient and easy to use. Due to their perceptions about the reliability of the information found, they rarely check it’s accuracy with an HCP and can find it difficult to apply to their own lives.

Combining DTMs with evidence-based information is important to ensure that those who choose to access healthcare on these mediums are getting relevant and accurate advice that they can apply to their own life. CPs need to enhance their own digital literacy skills as this will allow them to start imbedding digital media into their PH service delivery and to signpost the public to reliable sources of advice. This needs to be driven by policy that aims to enhance the publics' digital health literacy.

Abbreviations

CP = community pharmacist

DTM = digital and tele mediums

HCP = healthcare professional

IBM = International Business Machines

MH apps = mobile health applications

NHS = National Health Service

PH = public health

PIS = participant information sheet

SM = social media

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Table 1 (a): Demographics of survey respondents in each of the survey sections

	Perceptions of pharmacists		**Perceptions of social media**		**Perceptions of mobile health apps**	
	Count	**%**	**Count**	**%**	**Count**	**%**

Gender						
	Male	364	46.1	209	45.7	167	46.3
	Female	420	53.2	242	53.0	193	53.5
	Not stated	6	0.8	6	1.3	1	0.3
Age						
	Under 24 years	252	31.8	155	33.8	112	30.9
	24-35 years	265	33.4	146	31.9	125	34.4
	36-45 years	122	15.4	72	15.7	54	14.9
	46-55 years	71	9.0	41	9.0	32	8.8
	56-65 years	61	7.7	31	6.8	32	8.8
	66-75 years	13	1.6	7	1.5	6	1.6
	Over 75 years	7	0.9	6	1.3	2	0.6
Ethnicity						
	White	314	39.8	184	40.4	145	40.2
	Black African	106	13.5	58	12.7	48	13.3
	Indian	95	12.1	63	13.8	38	10.5
	Pakistani	62	7.9	32	7.0	37	10.2
	Mixed	53	6.7	31	6.8	23	6.4
	Other Asian	47	6.0	27	5.9	21	5.8
	Any other ethnicity	36	4.6	14	3.1	12	3.3
	Black Caribbean	33	4.2	17	3.7	14	3.9
	Bangladeshi	22	2.8	12	2.6	11	3.0
	Chinese	16	2.0	10	2.2	6	1.6
	Black other	14	1.8	7	1.5	8	1.6
Education						
	Pre-16 education	306	41.0	187	43.1	129	38.3
	Post-16 education	441	59.0	247	56.9	208	61.7
Employment						
	Healthcare professional	108	13.8	49	10.8	59	16.3
	Non-healthcare professional	663	84.5	394	87	299	82.8
	Not stated	14	1.8	10	2.2	3	0.8

Table 1 (b): Demographics of England and Greater London

	Local and national statistics (%)	
	Greater London	**England**
Gender		

Male	49.6	49.3
Female	50.4	50.7
Age		
Under 35 yr	53.0	45.4
Over 35 yr	47.0	54.6
Ethnicity		
White	60.0	86.0
Non-white	40.0	14.0

Table 2: Perceptions of mobile health applications and social media for health information

Perceptions of mobile health applications	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Total
I found searching for health information on mobile health apps to be very fast	0 (0%)	1 (0.7%)	29 (21.3%)	44 (32.4%)	61 (45.6%)	135
Access to health information on mobile health apps was free and convenient	1 (0.7%)	5 (3.7%)	14 (10.4%)	42 (31.1%)	73 (54.1%)	135
Access to health information on mobile health apps was confidential	2 (1.5%)	6 (4.4%)	25 (18.5%)	32 (23.7%)	70 (51.9%)	135
I was very satisfied using mobile health apps for public health information and will recommend it	0 (0%)	5 (3.7%)	38 (28.1%)	43 (31.9%)	49 (36.3%)	135
I was not sure how to correctly apply the information I found on mobile health apps	30 (22.4%)	23 (17.2%)	44 (32.1%)	26 (19.4%)	12 (9%)	135
Perceptions of social media for health information						
	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**	**Total**
The health information I found was reliable	3 (1.6%)	10 (5.3%)	49 (26.1%)	98 (52.1%)	28 (14.9%)	188
The health information I found was useful	3 (1.6%)	3 (1.6%)	25 (13.4%)	94 (50.3%)	63 (33.2%)	188
I found searching for health information on social media to be very fast	1 (0.5%)	10 (5.4%)	21 (11.3%)	73 (38.7%)	83 (44.1%)	188
Access to health information on social media was free and convenient	2 (1.1%)	1 (0.5%)	20 (10.7%)	62 (33.2%)	103 (54.5%)	188
Access to health information on social media was confidential	7 (3.8%)	16 (8.6%)	53 (28.1%)	49 (25.9%)	63 (33.5%)	188
I was very satisfied using social media for public health information and will recommend it to a friend	4 (2.2%)	19 (10.3%)	42 (22.2%)	72 (38.4%)	51 (27%)	188

I was not sure how to correctly apply the information I found on social media to my personal health situation	22 (11.9%)	29 (15.7%)	62 (33%)	58 (30.8%)	17 (8.6%)	188

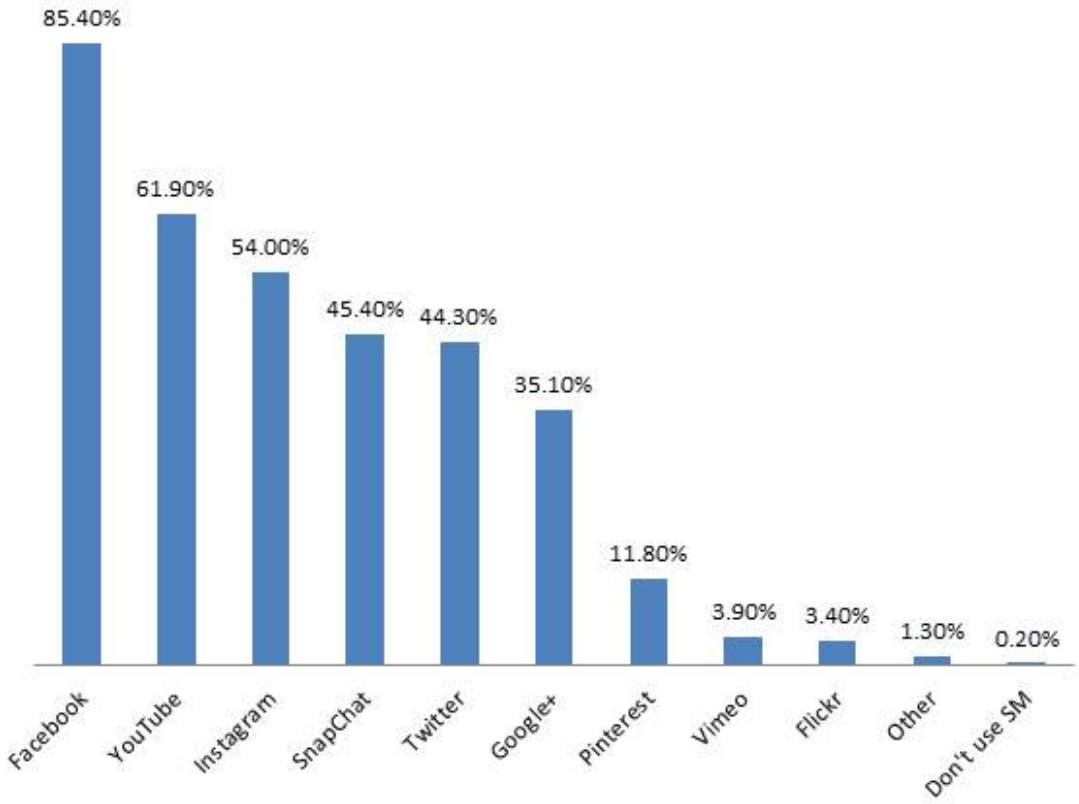

Figure 1: The social media platform(s) that the general public have an account with

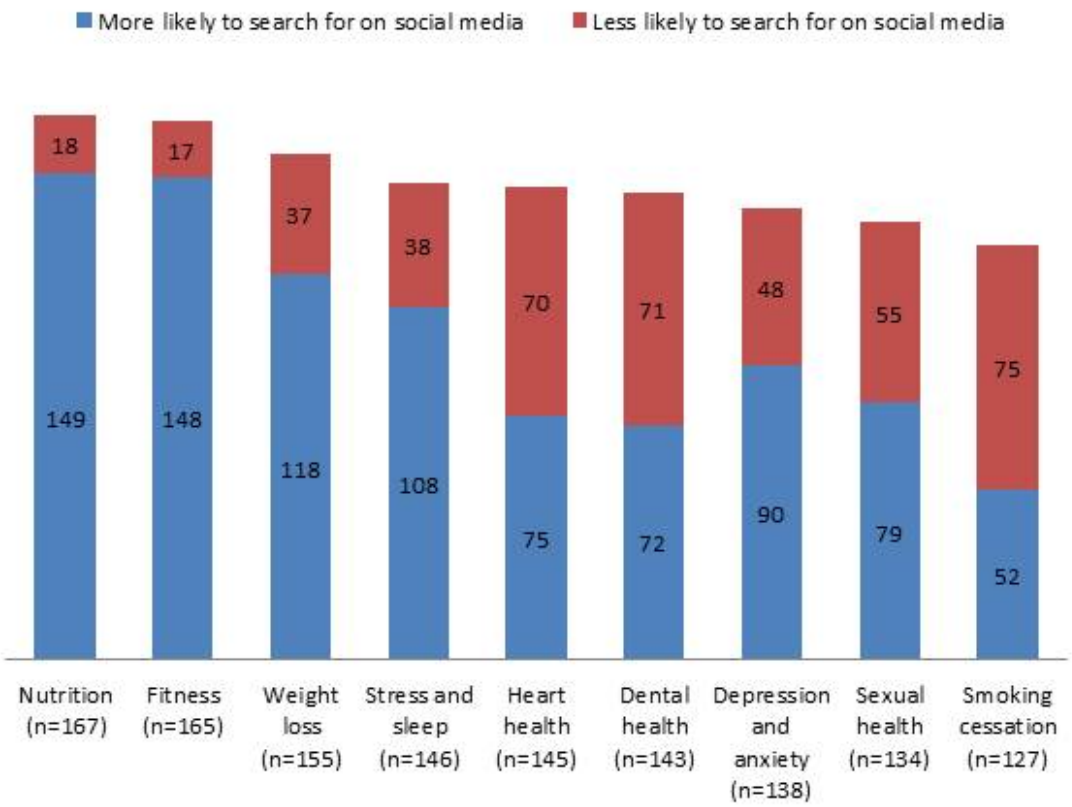

Figure 2: Health topics that the public are interested in and their likelihood of searching for information about these topics on social media