



# Social Media Use By People With Diabetes In Saudi Arabia: A Survey About Purposes, Benefits And Risks

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Amal Alzahrani   
Turki Alanzi 

Health Information Management and  
Technology Department, College of  
Public Health, Imam Abdulrahman Bin  
Faisal University, Dammam, Saudi Arabia

**Purpose:** The aim of this study was to analyze the use of social media by people with diabetes in Saudi Arabia and to know the purposes, benefits and risks of its use.

**Methods:** In this study a cross-sectional survey was carried out with a random sample of 158 people with all type of diabetes living in Saudi Arabia. The survey was distributed using WhatsApp and Twitter accounts of diabetic associations in Saudi Arabia. Descriptive statistics was used to analyze the data.

**Results:** The majority of the respondents were females (69%), and most of them had type 1 diabetes (70%). Almost half (47%) of the sampled population stated that they used social media for obtaining information related to diabetes; 34% employed these platforms to get information not linked to diabetes; and the rest, 19%, were not users of social media. Also, the participants used these tools for different purposes; and the most used social media for obtaining diabetes related information were WhatsApp (67%), Twitter (54%) and Snapchat (39%). The principal benefits involved in the utilization of social media were raising awareness about diabetes (78%), improving education among patients (78%), and facilitation of communication between patients and doctors (44%). The respondents pondered that breaching of patient privacy (5%) and dissemination of inaccurate information (30%) were dangers implicated in the use of social media.

**Conclusion:** The outcomes indicated that WhatsApp was the social media most used by the participants to communicate and obtain information about diabetes. According to the participants, social media platforms were useful to improve education, awareness and communication among people with diabetes, family and doctors. However, due to the risks involved in the use of social media, health and educational organizations must work to ensure that the published information is accurate and does not affect the privacy of patients and healthcare providers.

**Keywords:** social media, people with diabetes, Saudi Arabia, survey

Correspondence: Turki Alanzi  
Department of Health Information  
Management and Technology, College of  
Public Health, Imam Abdulrahman Bin  
Faisal University, King Faisal Road,  
Dammam 31441, Saudi Arabia  
Tel/fax +966 133331211  
Email talanzi@iau.edu.sa

## Introduction

Diabetes has been widespread in recent years on all age groups, both males, and females, and about 425 million adults were living with diabetes around the world in 2017.<sup>1</sup> In 2015, diabetes was the direct cause of 1.6 million deaths.<sup>2</sup> According to the International Diabetes Federation (IDF), Saudi Arabia ranked fourth among the top 5 countries with the largest diabetic population in the Middle East and North Africa region where the diabetes statistics of these top 5 countries by 2017 were: Egypt (8,491,029); Pakistan (7,656,317); Islamic Republic of Iran (5,108,254);

Saudi Arabia (4,004,877); and, Sudan (2,317,054).<sup>1</sup> Also, the Saudi Health Information Survey Handbook 2013, indicated that there were about 1,851,080 people with diabetes over the age of 15 years, and that this figure will increase to over 4,300,000 in 2030.<sup>3</sup>

Contemporaneously to these growing statistics about the increase in the population of people with diabetes on a global scale, there is also an unprecedented development and use of the internet and social media worldwide that can potentially be used to help to the health care of these people. In this sense, social networking sites have become a global phenomenon and have reached such a spread that they have millions of users around the world as shown in the following statistics expressed in millions of people by April 2018: Facebook (2234), YouTube (1500), WhatsApp (1500), Instagram (813), Twitter (330), Skype (300), LinkedIn (260), SnapChat (255), Pinterest (200), Telegram (200).<sup>4</sup> Similarly, the number of active internet users by December 2017 were 4157 million persons.<sup>5</sup> In relation to the total population of Saudi Arabia, the percentage of users of social media were by the beginning of 2018: WhatsApp (73%), YouTube (71%), Facebook (66%), Instagram (54%), Twitter (52%) SnapChat (39%), Skype (24%).<sup>6</sup> Likewise, the percentage of active internet users were 90.98%.<sup>6</sup>

In relation to diabetes, people turn to the Internet and social networks to obtain general information, education, communication, to share experiences and clinical information, to interact and make contact with other people who live in similar health conditions, to provide and receive support and to exchange information on self-management and diabetes awareness.<sup>7–12</sup> In addition, social media can provide effective, universal and accessible platforms that can motivate involvement and engagement among diabetic users to provide care in order to make health promotion interventions successful.<sup>13</sup>

Similarly, in a recent survey, it was found that people with diabetes highly involved in an online diabetes community are more likely to have better blood glucose levels, a higher quality of life and a better diabetes self-care than those who are not committed to the community.<sup>14</sup> Also, social media offer a useful alternative that patients, health professionals, and the general public can use to communicate about health-related problems and to allow collaboration and interaction between users with the possibility of helping to improve health outcomes.<sup>15</sup> It is pertinent to comment that although benefits for patients have been observed, the use of social media also presents some potential risks related to the publication of inaccurate information, violations of the

confidentiality of the patient and harm to the professional image, among others problems.<sup>15,16</sup>

Given that the use of social media offers significant advantages, such as broader scope, convenience, ease of management and relatively low costs, then the use of social media for self-management of diabetes and education may be a viable option in the future which could be greatly facilitated by the application of the recent e-health and m-Health technologies.<sup>10,17</sup>

In relation to the countries of the Middle East, although there is a massive popular use of social media in this region, only a few studies have been conducted on the impact of these tools in the control of diabetes.<sup>11</sup> In addition, as far as we know, there are no studies on the use of social media by people with diabetes living in the Arab world. In this sense, the objective of this study is to find out which are the social media used by people with diabetes in Saudi Arabia and to know what are the reasons, benefits, and risks of its use.

## Methods

### Study Settings And Participants

This study was exploratory in nature and the survey was aimed at people with all type of diabetes with the objective of finding out which are the social media used by them and what are the purposes, benefits, and risks of its use.

The research carried out was a cross-sectional study targeting people with diabetes in general, from which we selected a random sample of 160 people with diabetes living in Saudi Arabia. In this sample we detected that there were participants who were users of social media and others who did not use these tools. The participants who were not social media users asked someone, a relative or a friend who were a social media user to complete the questionnaire survey. The survey was originally written in Arabic language so that all participants could understand it.<sup>18</sup> Then, the survey was translated into English for the purposes of this study. It is convenient to point out that we used a purposive sampling method without a sampling frame. The completion of the questionnaire was considered to imply informed consent to participate in the study, and the ethical approval was obtained from the Institutional Review Board of the Imam Abdulrahman Bin Faisal University.

### Inclusion And Exclusion Criteria

Inclusion Criterion: People with diabetes who were living in Saudi Arabia.

Exclusion Criterion: Persons living in Saudi Arabia who were not people with diabetes.

## Data Collection

The survey was addressed to all people with diabetes living in Saudi Arabia who was asked to participate and complete an online web-based survey tool which was distributed electronically between WhatsApp groups and direct contact with Twitter accounts of diabetic associations in Saudi Arabia. In this sense, we sent a direct message to the Twitter accounts of people with diabetes, and for WhatsApp, we sent it to our friends, who in turn sent it to those they knew, and to the participants, who, if they agreed to participate in the survey, filled out it voluntarily. In this study, 160 participants completed the electronic survey, but 2 of the respondents were excluded. One of them was not accepted because he was not diabetic, and the other one was eliminated because his data appeared duplicated. Therefore, only responses from 158 participants were considered in this survey. We could not estimate the response rate to the survey because it was distributed electronically to all people with diabetes who could access the Twitter and WhatsApp accounts. The data was collected in January 2018.

## Description Of The Questionnaire

The survey was elaborated based on logical arguments and on the literature review of some questionnaires of surveys conducted on the use of social networks and diabetes in Germany, United States and Australia; these surveys were analyzed by the research group and those questions that were pertinent to the context of Saudi Arabia were adapted to design the survey of our study.<sup>19-21</sup> Also, a panel of qualified people reviewed the preliminary draft to validate the survey questions regarding its accuracy. In addition, a pilot survey was conducted with a sample of 15 persons to observe its effectiveness. The results of this pilot survey served to make some modifications to the questions of the final survey.

The survey questionnaire consisted of 4 sections. The first section involved 6 questions directed to obtain demographic information of the participants (age, gender, nationality, social status, education level, career status); the second part of the survey asked for 6 personal diabetes linked questions (type of diabetes, duration of illness, current treatment, diabetes complications, number of relatives affected by diabetes, hospital visits); the third section was related to get information about “the general use of

social media” by people with diabetes and consisted of 11 questions (experience of using social media for general purposes, reasons for using or no using social media for general purposes, social media platforms employed, years of experience using social media, time spent daily in social media programs, awareness of diabetes accounts in social media sites in Arabic and foreign languages, opinion about the use of social media in the delivery of diabetes care, reasons for using or no using social media in relation to diabetes care); and, the last part of the survey was about “the use of social media for diabetes related purposes” and contained 11 questions (social media platforms utilized for diabetes related purposes, type of information about diabetes searched for in social media, purposes for using social media for diabetes related information, opinions about the information accessible in social media platforms, benefits and risks of diabetes related information available in social media sites, valorization of information published on social media, age and suitability of the use of social media, diabetes group members in social media sites and discussion of health condition, and opinions about what helps to the success of social media sites for diabetes related purposes).

The questions varied between yes/no questions, multiple choice, 3-point scale (agree, disagree, and neutral), and short questions. Needed questions required mandatory answers, which guaranteed that no required questions were left blank. Respondents automatically moved to the next section of the survey if they met the criteria and were eligible to complete the survey, otherwise, they ended with their response to the discrimination questions.

## Statistical Analysis

Basic descriptive statistical analyses were used to analyze the data obtained from this survey, and the measures were expressed in percentages.

## Results

### Demographic And Clinical Characteristics Of The Participants

The demographic and clinical characteristics of the participants of this study carried out with the objective of detecting which are the social media used by them and what are the purposes, benefits, and risks of its use are shown in [Tables 1 and 2](#), respectively. In [Table 1](#), we can perceive that more than half of the respondents (69%) were females, and 90% of the surveyed were Saudis.

**Table 1** Demographic Data Of The Respondents (n=158)

Variable		n	%
Gender	Male	49	31
	Female	109	69
Age	Less than 18	22	14
	18–25	43	27
	26–44	50	32
	45–64	39	25
	More than 65	4	3
Nationality	Saudi	142	90
	Non-Saudi	16	10
Social status	Single	79	50
	Married	75	47
	Divorced	2	1
	Widowed	2	1
Educational level	Less than secondary	25	16
	Secondary	41	26
	Bachelor	81	51
	Master	7	4
	PhD and above	4	3
Career status	Student	53	34
	Employee	52	33
	Retired	17	11
	Non-employee	36	23

Also, 34% of participants were students and 33% were employees; the rest were non-employees or retired persons.

Regarding some of the clinical characteristics of the participants, [Table 2](#) indicates that 70% of them had type 1 diabetes and 30% type 2 diabetes. The proportion of females with type 1 diabetes was 75% and the proportion of males was 25%. Similarly, the percentage of females with type 2 diabetes was 55% and the percentage of males with type 2 diabetes was 45%.

## General Use Of Social Media By The Participants

From the survey, we found that most of the participants (81%, n=128) were “general social media users”, while the rest of them (19%, n=30) indicated that they did not use any type of social media tools. The 128 “general social media users” obtained different types of information in social media, including information related to diabetes. Also, as it was pointed out in the Methods section, the 30 participants who were not users of social media asked someone, a relative or a friend, to complete the questionnaire.

Out of 128 participants who were social media users, 74 of them used social media to obtain information associated with diabetes, and the other 54 participants used social media to get different information not connected to this disease. In other words, related to the total sample of 158 participants, 74 of them (47%) used social media to obtain information linked to diabetes; 54 participants (34%) employed these platforms to get information not associated to diabetes; and the rest of them, 30 participants (19%) were not users of social media.

Among the 128 general social media users, most of them (73%, n=93) had been utilizing social media for more than four years and the rest of the respondents (27%, n=35) had less than 4 years using these tools. In the same way, most of these social media users (84%, n=108) dedicated between 1 and 7 hrs a day to this activity, and the rest of them (16%, n= 20) employed more than 7 hrs per day in social media sites.

As indicated above, 19% of the surveyed persons (n= 30) did not use any type of social media and the reasons giving by them about this issue are described in [Figure 1](#). In this figure we appreciate that most of them said that they did not know what social media programs were. Also, almost half of them were not interested in joining social media programs. Other opinions for not using social media were related to privacy and cultural reasons.

In relation to the 128 participants who were “general social media users”, they utilized, according to [Figure 2](#), the following social media applications: WhatsApp (96%), Instagram (67%), Twitter (59%), Facebook (25%), SMS (20%), LinkedIn (2%) and Tango(2%).

These respondents used the social media for different purposes as listed in [Figure 3](#). According to this figure, the purposes for using above social media tools were: personal use; communication with family and friends; to find information of interest; for professional use related to job issues; to share photos and videos; for games and entertainments; and, to make new friends.

Regarding the use of social media sites in the delivery of diabetes care, it is possible to notice that among the 128 “general social media users”, 62.5% of them (n=80) were informed of accounts related to diabetes; 38 participants (48%) knew accounts in Arabic and foreign languages; and 35 respondents (44%) knew only Arab languages accounts. The opinions on the use of these accounts are reflected in [Table 3](#). In this table we detected that most of them considered that social media were useful in raising public awareness and contributed to health education and

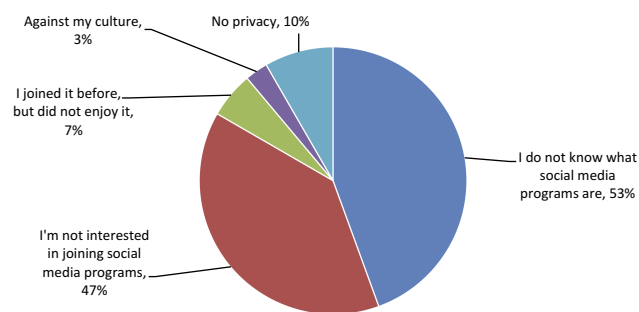
**Table 2** Clinical Characteristics Of The Respondents (n=158)

Variable		n	%
Type of diabetes	Type I (83 female-28 male)	111	70
	Type II (26 female-21 male)	47	30
Duration of illness	Less than 1 year	10	6
	1–5 years	40	25
	6–10 years	44	28
	11–15 years	20	13
	More than 15 years	44	28
Current treatment method	Daily injections	48	30
	Insulin pump	52	33
	Regularly controlled blood glucose (Monitor only)	4	3
	Oral medications	27	17
	Low carbohydrate diet	0	0
	Use more than one method	27	17
Complications or other diseases related to diabetes	No Complication	118	75
	Kidney diseases	1	1
	Cardiovascular diseases	1	1
	Eye and retinal diseases	16	10
	Brain Stroke	0	0
	Diabetic foot	2	1
	Ketoacidosis	18	11
	Other	8	5
Family member with diabetes	None	56	35
	Only one	39	25
	2–3 member	37	23
	More than 3	26	16
Hospital visits related to diabetes during last 6 months	Never	45	28
	2–3 times	75	47
	Three times and more	29	18
	I am not sure	9	6

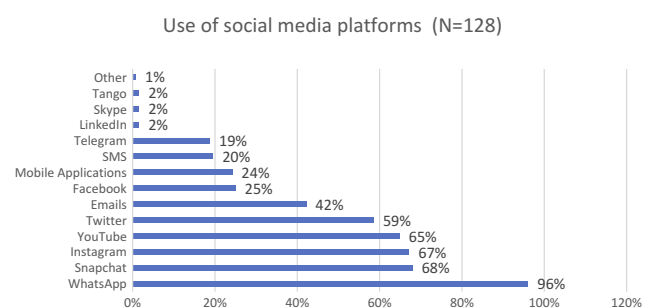
advice to people with diabetes. Almost half of the social media users thought that these tools were useful to increase communication between doctors and patients, and some of them believed that social media were less expensive than medical consultations. On the other hand,

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.

Also, as we described previously, 54 participants of the 128 “general social media users” did not employ these



**Figure 1** Reasons for respondents not to use social media (n=30).



**Figure 2** Most used social media platforms (n=128).

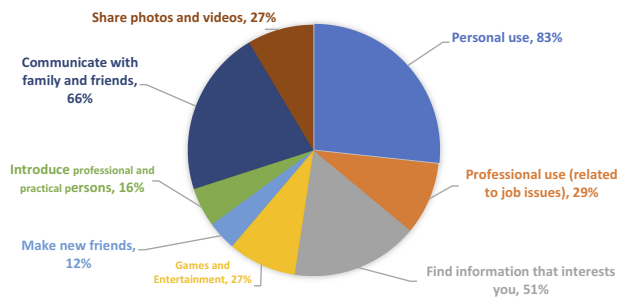


Figure 3 Purposes of the use of social media (n=128).

tools to get diabetes-related information, and their reasons are presented in Figure 4. In this figure, we see that some of them preferred face to face interactions with the providers of health services and did not trust the accuracy or the sources of the published information. Additionally, other reasons presented in the mentioned figure were: I have no a specific reason to use them; social media cannot provide me with useful information that can help me manage diabetes; and, I do not know social media related to diabetes.

In addition, in Table 4 is presented the demographic data of the 128 “general social media users”. In one of the columns appears the information about the 74 participants who used social media for obtaining diabetes-related information, and in the other column is listed the information about the 54 social media users who did not employ these tools to find information about diabetes. In this table we can appreciate the following general tendencies: i) the largest proportion of participants using social media were females. However, the user group that sought information about diabetes had a higher percentage of females than the user group that did not use them for these purposes; ii) The largest number of participants who used social media to obtain information about diabetes had type 1 diabetes; iii)

Table 3 Respondents’ Opinions About Using Social Media For Diabetes-Related Purposes (n=128)

Opinion	%
Useful in raising public awareness	78
Useful in the process of health education	78
Useful in increasing communication and answer questions between doctors and patients	44
Less cost to the patients than to go to hospitals and doctors	25
May pose a risk to patients health because of receiving incorrect or harmful information	30
May violate the privacy of the patient	5
I did not know that these sites can help provide care for diabetics	3

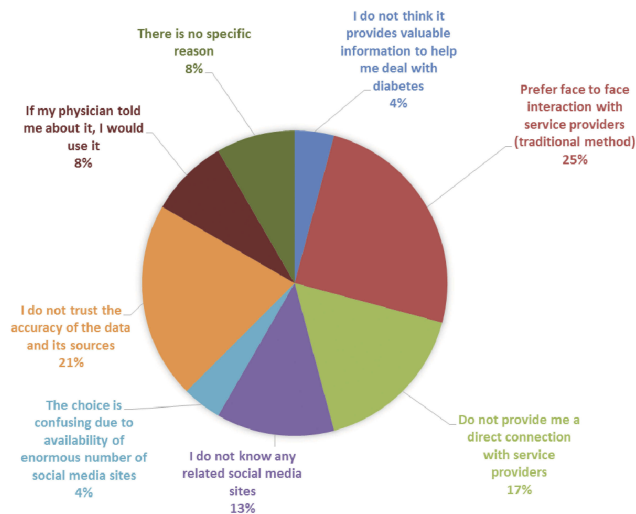


Figure 4 Reasons for participants not to use social media for diabetes related purposes (n=54).

Most of the social media users had an educational degree above the secondary level; iv) the proportion of students and of people under 44 years old were higher in the group of participants who used social media to obtain information about diabetes; v) regarding nationality, the group that used social media for purposes related to diabetes had a greater proportion of non-Saudi people and a greater number of singles.

### Use Of Social Media For Diabetes Related Purposes

According to Figure 5, the social media employed by the 74 participants (47%) who used these communication tools for obtaining diabetes related information were WhatsApp (67%), Twitter (66%), Snapchat (39%), Emails (15%), Telegram (11%), Skype(3%), and Tango (1%).

Similarly, in Table 5 we observe the type of information related to diabetes that participants sought in social media. Most of them searched for information related to healthy eating and physical activity or general diabetes information. Also, they sought for information about how to improve the quality of life in people with diabetes and how to deal with psychological, mental and emotional aspects of these patients. Similarly, they searched for discussion groups, online support, treatment options, and so forth.

Also, the reasons that people with diabetes exposed to use social media are described in Table 6. According to this table, the reasons to use social media for diabetes-related purposes were associated to the search for general information about diabetes; to communicate with other

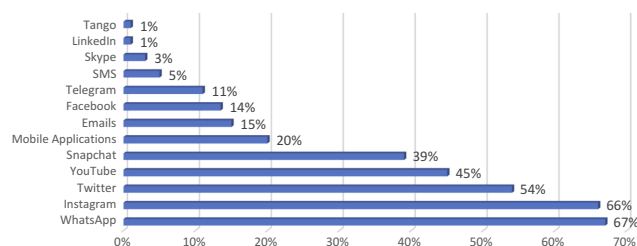
**Table 4** Comparison Of Demographic Data Among Participants (n=128)

Variable	Using Diabetes-Related Social Media		Not Using Diabetes-Related Social Media	
	n= 74		n= 54	
<b>Gender</b>	n	%	n	%
Male	13	18	24	44
Female	61	82	30	56
<b>Age</b>				
Less than 18	14	19	8	15
18–25	27	36	13	24
26–44	30	41	10	19
45–64	3	4	22	41
More than 65	0	0	1	2
<b>Nationality</b>				
Saudi	63	85	51	94
Non-Saudi	11	15	3	6
<b>Social status</b>				
Single	51	69	23	43
Married	23	31	28	52
Divorced	0	0	1	2
Widowed	0	0	2	4
<b>Educational level</b>				
Less than secondary	7	9	11	20
Secondary	17	23	16	30
Bachelor	44	59	25	46
Master	3	4	2	4
PhD and above	3	4	0	0
<b>Career status</b>				
Student	41	55	12	22
Employee	21	28	21	39
Retired	0	0	9	17
Non-employee	12	16	12	22
<b>Type of diabetes</b>				
Type I	70	95	32	59
Type II	4	5	22	41

people with diabetes to get help, advice and experience sharing; food information; medication; diet and sports; evaluation of medical condition and symptoms, and others reasons.

Alike, in Table 7 are shown the participants' opinion about the diabetes-related information published in social media. Regarding this topic, most of the participants agreed that the information displayed in social media is educational. However, a small percentage of the surveyed persons opined that the information is unreliable.

Social Media Programs Used for Diabetes-Related Purpose (N=74)

**Figure 5** Social media platforms used for diabetes related purposes (n=74).

In addition, participants suggested in Figure 6 the following set of criteria to make social media useful and successful for people with diabetes: i) inclusion of all type of information (medical, pharmaceutical, food, and so forth) required by people with diabetes ii) facility for the patient to communicate with all services providers; iii) social media must be simple, well designed and easy to use; iv) social media should offer free or at least not expensive services; v) social media must provide accurate information from reliable sources; and, vi) social media must provide guarantee that personal data is secure.

Regarding benefits and harms 96% of the 74 participants indicated that they obtained beneficial information about diabetes in social media, while (13%) stated that they followed harmful diabetes information in social networks. Also, out of 74 participants, 47 of them (63.5%) pointed out that social media related to diabetes were suitable for all ages. However, 11 participants (15%) indicated that these tools were not appropriate for the elderly or for young patients.

In relation to social media groups, 72% of the 74 participants of social media diabetes-related users were members of a diabetes “Group” in social media sites.

**Table 5** Type Of Information (n = 74)

Information	%
Information about healthy eating and physical activity	70
General information	57
How to improve the quality of life for diabetics	55
Psychological, mental and emotional aspects of diabetics	49
Discussion groups and online support	38
Treatment options and alternatives	32
The social aspects of diabetes	27
Diabetics foot care	19
How to measure blood glucose	15

**Table 6** Reasons For Using Social Media For Diabetes-Related Information (n=74)

Reasons	n	%
General information about diabetes	53	72
Communicate with other people with diabetes to get help, advice and experience sharing	50	68
Calculate the ratio of carbohydrates and the dose necessary for them (important food information for the dose of insulin)	42	57
Provide information on medication and how they are used and available treatment options	32	43
Search for diet and sports that helps me to control weight and improve blood sugar level	29	39
Understanding the medical condition and symptoms	26	35
Communicate securely and more regularly with care providers	23	31
Helps me to control my blood sugar levels consistently throughout the day	15	20
Give my opinion about the health service I have received or my doctor	13	18
Obtain a second medical opinion from the specialists regarding my medical condition or any new procedure or treatment	13	18
Help me search for the options available to me of doctors or medical facilities	12	16
Reminder to take medication doses and time for blood glucose measure	11	15
Booking and scheduling appointments with my doctor without having to go to the hospital	9	12
Helps me know the dose of treatment I need based on tracking blood sugar level	8	11
Allows me to access my medical file and the results of laboratory and radiology tests	2	3

**Table 7** Participants' Opinion About Diabetes-Related Information (n=74)

Opinion	% Agree	% Disagree	% Do Not Know
Reliable	24	30	23
Accurate	11	28	41
Important	39	14	12
Educational	69	7	4
Without value	0	39	15
Unreliable	9	22	30

### Participants Comments

The last part of the survey was an open question in a case that the participants had any comments they would like to add. In this sense, eleven valuable comments were received and grouped into five categories according to their similarities. Most comments required the participation of doctors to provide communication channels with patients and to deny harmful rumors and verify the content of WhatsApp messages. Also, doctors were necessary to increase the community awareness of non-diabetes people



**Figure 6** Criteria for a successful diabetes-related platform (n=74).

and to provide information about how to prevent this disease. In addition, doctors were needed to provide reliable, specialized and easily accessible programs instead of waiting a long time for a consultation appointment. Also, doctors were required to prepare TV programs suitable for everyone to correct the misconceptions about diabetes.

### Discussion

The results of this study related to the use of social media by people with diabetes in Saudi Arabia indicated that the “general social media users”, employed in a decreasing order the following platforms: WhatsApp, Instagram, Twitter, Facebook, SMS, LinkedIn and Tango. This result coincides with the fact that WhatsApp was the most used social media by the population in Saudi Arabia.<sup>6</sup> The participants used these communicational tools to obtain information on different topics, including diabetes-related information

More than half of the social media users’ participants considered that the main reasons for using social media were for personal use, to communicate with family and friends, and to find information of interest. Also, most of them thought that social media were useful to raise public awareness, to improve the level of health education, and to contribute to increase communication between doctors and patients. As well, participants expressed that the use of social media can cause risks to patients because of the publication of incorrect information or the breaching of patient privacy. In relation to the risks some studies have mentioned the potential dangers that exist in the use of social media.<sup>22,23</sup>



On the other hand, participants who used social media to obtain information related exclusively to diabetes employed these tools according to the following declining sequence: WhatsApp, Twitter, Snapchat, Emails, Telegram, Skype and Tango. Again, this order is expected because WhatsApp was the most used application by the people in Saudi Arabia.<sup>6</sup>

Most of these participants used social media to find information about exercise and diet, information related to diabetes, and information about the quality of life and social and emotional aspects of people with diabetes. Also, participants looked for information on online support and discussion groups related to diabetes. In this regard, a similar research found that participants in several diabetes online communities used social media to search for information on diabetes management, diabetes care, nutrition and technological advances.<sup>24</sup> As noted, there are several coincidences between these studies.

Likewise, the main reasons that more than half of these respondents exposed to use social media were to search for general information about diabetes and food, and to communicate with other patients with diabetes to obtain support and share experiences. In a similar study the main reasons for using social media by patients with diabetes were to find information for the care and management of diabetes, and to contact groups of patients with common experiences.<sup>24</sup> These reasons coincide in a general way with those found in our study. In this sense, it is worth to mention that more than half of the participants of our study were members of diabetes groups existing in these media.

Also, most of the participants believed that the diabetes-related information available in social media is educational. Similarly, most of the respondents indicated that they obtained useful and beneficial information about diabetes in social media. Other studies reported similar opinions about the benefits obtained by the utilization of social media.<sup>22-24</sup> In addition, the participants pointed out that the use of social media entailed risks in the use of information. In this regard, this opinion is consistent with the results of previous published studies that suggested that the use of social media can lead to the breach of patient privacy and the handling of inaccurate information.<sup>22,23</sup> Moreover, the participants considered that it was necessary the presence of doctors to help analyze the risky information published on social media. In the same way, the respondents considered that medical advice is required to verify the information of WhatsApp messages.

The main limitation of this study was the small size of the sample of participants whose majority came from the eastern region of Saudi Arabia, so the results of this

research cannot be generalized to the entire Arab world. Another limitation is that most of the participants were females and people under 45 years of age. Similarly, this research did not analyze the content of the published information on diabetes in social media. Also, the time of the study was very short and all the survey data were self-reported.

In future studies related to this research, it is necessary to use a sample with a larger number of participants that includes as much as possible, similar proportions of male and female patients with diabetes of all ages from most of the regions of Saudi Arabia. In addition, it is convenient to evaluate and review the content of the published information on diabetes in social media considering its usefulness, accuracy, reliability, the risks that arise from the exchange of information online and the consequences of the violation of confidentiality and privacy. Also, it is important to consider the relationship of the participation of social networks with the glycaemic control and a better lifestyle. Similarly, it would be interesting to perform a detailed statistical study to verify if there is an association between the use of social media and the demographic and clinical characteristics of the population.

It is pertinent to comment, that up to the authors knowledge this survey was the first study conducted in Saudi Arabia to know the opinion of people with diabetes about the use of social media in diabetes related topics. In addition, from the review of the literature, we found that there are only a few studies published in this field.

Finally, from this study it is possible to recommend the implementation of social media projects according to suggestions given in [Figure 6](#) which points out that social media should be well designed, easy to comprehend, simple, harmless, accurate, and reachable to all persons with diabetes, family members, friends and healthcare providers.

## Conclusion

The findings of this study indicated that WhatsApp was the social media most used by people with diabetes in Saudi Arabia to communicate and obtain information about this disease; and according to the respondents social media platforms were useful to improve the education, awareness and communication among people with diabetes, family members and doctors. However, due to the risks involved in the use of social media, healthcare organizations must work to ensure that the published information does not affect the privacy of patients or the healthcare provider's image. In addition, educational

institutions should contribute to design social media programs that publish general information about diabetes that is accurate and easy to understand by people with diabetes. In general, the results suggest that there is a potential to employ social media tools in education and diabetes management throughout the Saudi Arabian region.

## Disclosure

The authors report no conflicts of interest in this work.

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