

WhatsApp Mobile Application as a Learning Tool for Teaching Dermatology to Undergraduates

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ABSTRACT

Introduction: The mobile app WhatsApp is gaining popularity in Medical Education informally over the last few years because of its easy availability, instant access and ease in transferring high quality medical images. Dermatology being a highly visual subject, WhatsApp can be used as a learning tool in addition to didactic lectures.

Aim: To assess the perception of undergraduate students and faculty about e-learning using WhatsApp in Dermatology.

Materials and Methods: This cross-sectional study was conducted in the Department of Dermatology, Christian Medical College and Hospital, Ludhiana, Punjab, India, in August 2020 among second year undergraduate students. Two modules based on Case Based Learning (CBL) were made and posted on a dedicated WhatsApp group (including students and dermatology faculty). Students were asked to send responses to questions on the group. Students and faculty were also asked to fill a pre-structured, prevalidated feedback questionnaire

to assess their perception regarding the use of WhatsApp as a learning tool. Descriptive analysis was used. Open ended questions were analyzed by thematic qualitative analysis and expressed as percentages.

Results: Total 80 students participated in the study, 50 students who filled the feedback questionnaire, 30 were females, mean age of the study group was 20.25 years. Twenty seven students (54%) were of the opinion that WhatsApp was a good motivator for Self Directed Learning (SDL) while 20 (40%) of them remained neutral. Twenty nine (58%) students wanted WhatsApp as an online teaching method to be part of teaching in Dermatology. Thirty students (60%) felt WhatsApp was a flexible learning tool in terms of time and place. Among total four faculty, 3 (75%) agreed that WhatsApp was a good learning tool, increased teacher-student interaction and was a good motivator to self-directed learning.

Conclusion: If used with a well-structured educational research model, WhatsApp becomes a highly effective tool in medical education.

Keywords: Interactive teaching, Medical students, Online learning tools, Online teaching, Social media

INTRODUCTION

Teaching dermatology to medical students is of paramount importance as medical students will encounter skin diseases either while pursuing MBBS or when they start practicing. In the new curriculum for training of Indian Medical Graduates, a total of 20 hours have been assigned to Dermatology lectures. They have six weeks of clinical posting spread over a period of three years [1].

Dermatological diseases pose a significant burden on patient morbidity and financial health. It is evident from curricula followed in many medical schools that more time is allotted for other clinical specialties, and till date, dermatology has to compete for space in the medical curriculum [2]. Authors believe that maximizing the efficiency of time spent teaching dermatology to medical students can result in improvement in patient morbidity and mortality from cutaneous diseases in addition to enhancing the overall education of future Indian medical graduates. Even if adequate hours are incorporated into curriculum for Dermatology, the time and resources are insufficient [3].

The mobile app WhatsApp has gained popularity in medical education informally over the last few years because of its easy availability, instant access and ease in transferring high quality medical images. These attributes can be used to advantage in Dermatology as this is a highly visual subject [4].

WhatsApp has slowly gained entry into the field of dermatology for consultations, especially in remote settings and in areas with scarcity of dermatologists [5]. It is a powerful and versatile tool which provides high quality images instantly for reference and also allows doubts regarding the subject to be dealt with instantly [6]. It enables storage of these images for self-directed learning and reference at a later date. WhatsApp in Dermatology can be used to reduce the number of didactic lectures for various competencies and to increase active

and self-directed learning and knowledge retention. Additionally, it enables the teacher to present color images in a visually dominant field of medicine. It has been used in other fields of medicine as well [7]. A review of literature revealed that WhatsApp is also being used in telemedicine, consultations in maxillofacial, plastic, neurosurgery and general surgery, cardiology and telestroke units [8]. There is no literature on the evaluation of the effectiveness of WhatsApp in Dermatology teaching for medical students. This study was conducted to assess the perception of undergraduate students and faculty about e-learning using WhatsApp in Dermatology.

In this study it was hypothesised that using WhatsApp as a learning tool will enable the undergraduate medical students to grasp and register visual images of common dermatological conditions and make them confident to diagnose and treat them effectively. It would also motivate the undergraduate students to learn Dermatology through case based discussions and interactivity. Specific objectives were to assess the perception of undergraduate students and faculty about e-learning using WhatsApp in Dermatology.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Dermatology, Christian Medical College and Hospital, Ludhiana, Punjab, India in August 2020 for duration of one month. Proper ethical approval for the study from the Institutional Ethics Committee (IECCMCL/117342019) was obtained.

Inclusion criteria: All second year undergraduate students and the entire faculty in the Department of Dermatology were included.

Exclusion criteria: The students who did not give consent for the study and the Dermatology faculty who do not give consent to participate in the study were excluded.

Procedure

Study was conducted on second year undergraduate medical students which included 80 students. The Dermatology faculty was sensitized about this study and two new modules based on Case Based Learning (CBL) were made on two topics. These included high quality images and questions to assess the cognitive domain. These two modules were validated by the experts. After taking written, informed consent for the study from the students and faculty, WhatsApp group was created which included the students and Dermatology faculty. First learning module was then posted on WhatsApp to the batch of 80 students. The clinical case scenario was followed-up by a trigger question/image after two days which pointed to the diagnosis and management of the disease in question. The students were asked to post their responses on WhatsApp number of the principal investigator. The students were encouraged to ask their doubts and queries regarding the topic on WhatsApp. Once a student posted his/her query on the topic it was either addressed via phone or by sharing a resource material. If the responses of the students were not forthcoming, gentle reminders and personal calls were made to send the responses. Once all the students had submitted their responses, the second CBL module was released on WhatsApp and the same procedure was followed. Once the responses with the final diagnosis was received (time limit of two days) for the second teaching module, these students and faculty were asked to fill pre-structured, prevalidated feedback questionnaire to assess their perception regarding use of WhatsApp as a learning tool. The questionnaires were designed by the principal investigator and construct validation was done by experts in the field of Dermatology and Medical Education faculty. It was designed based on the aims and objectives of the study. The five point Likert scale was used for scoring and ranged from strongly agree, agree, neutral, disagree and strongly disagree [Annexure-1,2].

STATISTICAL ANALYSIS

The data was entered in Microsoft Excel and analysed using Statistical Packages for Social Sciences (SPSS version 21.0. Armonk, NY:IBM Corp). Descriptive analysis was used. Open ended questions were analysed by thematic qualitative analysis and expressed as percentages.

S. No.	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	I feel that WhatsApp is a good motivator to do self-directed learning	9 (18%)	18 (36%)	20 (40%)	3 (6%)	-
2	I feel that other topics in Dermatology should also be taught using WhatsApp	4 (8%)	26 (52%)	8 (16%)	12 (24%)	-
3	I feel that WhatsApp is helpful in diagnosing common clinical cases	11 (22%)	20 (40%)	11 (22%)	3 (6%)	5 (10%)
4	I feel that WhatsApp as an online teaching method should be a part of teaching in Dermatology	7 (14%)	22 (44%)	12 (24%)	6 (12%)	3 (6%)
5	I feel that WhatsApp increases learning by increasing peer interaction	13 (26%)	14 (28%)	18 (36%)	4 (8%)	1 (2%)
6	I feel that WhatsApp increases the teacher student interaction	11 (22%)	13 (26%)	14 (28%)	9 (18%)	3 (6%)
7	I feel that WhatsApp enhances both online and off line learning	9 (18%)	22 (44%)	14 (28%)	3 (6%)	2 (4%)
8	I feel that WhatsApp is a flexible learning tool in terms of time and place	14 (28%)	16 (32%)	13 (26%)	1 (2%)	6 (12%)
9	I feel that WhatsApp enhances the educational standards of the undergraduate students	3 (6%)	18 (36%)	17 (34%)	3 (6%)	9 (18%)

[Table/Fig-1]: Student's perception of online learning using WhatsApp in Dermatology.

S. No.	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	I feel that WhatsApp is a good motivator for the undergraduate students to do self-directed learning	-	3 (75%)	-	1 (25%)	-
2	I feel that using WhatsApp as a learning tool in Dermatology is a good idea	-	3 (75%)	-	1 (25%)	-
3	I will make similar learning modules for other topics in Dermatology	-	1 (25%)	2 (50%)	1 (25%)	-
4	I feel that WhatsApp as an online teaching method should be a part of teaching in Dermatology	-	1 (25%)	2 (50%)	1 (25%)	-
5	I feel that WhatsApp increases the teacher student interaction	-	3 (75%)	-	1 (25%)	-
6	I feel that WhatsApp enhances both online and off line learning not only in undergraduate students but also in the faculty	-	2 (50%)	1 (25%)	1 (25%)	-
7	I feel that WhatsApp is a flexible learning tool in terms of time and place for the undergraduate students and faculty alike	-	4 (100%)	-	-	-

[Table/Fig-2]: Faculty's perception of online learning using WhatsApp in Dermatology.

RESULTS

Eighty students participated in the study. Of them there were 30 female students. The mean age of the study group was 20.25 years. A WhatsApp group was created and was named 'Dermatology case study'. The Feedback questionnaire was filled by only 50 students. Of these, 27 (54 %) students were of the opinion that WhatsApp is a good motivator for SDL whereas as 20 (40%) of them remained neutral. Thirty (60%) of the students wanted the faculty to teach other topics in a similar way using WhatsApp. Thirty one (62%) students agreed that WhatsApp is helpful in diagnosing common clinical cases in Dermatology. Twenty nine (58%) students wanted WhatsApp as an online teaching method to be part of teaching in Dermatology. Twenty seven (54%) students agreed that WhatsApp increased peer interaction while 24 (48%) students were of the opinion that the interaction between students and teachers also increases if WhatsApp is used as a teaching tool. Thirty one (62%) students perceived that WhatsApp enhances both online and off line learning. Thirty (60%) students felt that WhatsApp is a flexible learning tool in terms of time and place and 21(42%) opined that WhatsApp as a teaching tool enhances the educational standards of the undergraduate students [Table/Fig-1].

On doing thematic analysis, the most common themes which emerged were that using WhatsApp as a learning tool was enjoyable, fun learning, interactive and motivational. The students suggested more case based teaching should be using WhatsApp as a teaching tool. The students wanted institutional Wi-Fi connection to avoid network issues. They also requested that other faculty members should also use this learning tool for other topics. Another suggestion was to show more clinical photographs of the same condition to help them diagnose the dermatological condition from different angles.

Four faculty members took part in the study. Of them 3 (75%) agreed that WhatsApp is a good learning tool, increases teacher-student interaction and is a good motivator to do self-directed learning. One (25%) of the faculty wanted to introduce WhatsApp as a teaching module after this study. Half of the faculty perceived that WhatsApp enhances both online and off line learning but all agreed that it's a flexible tool in terms of time and place for learning [Table/Fig-2]. The suggestions from the faculty included the need for further training regarding use of newer teaching

learning methods. They agreed that traditional teaching methods can be monotonous at times and WhatsApp can increase interactivity if used judiciously. This study helped them to overcome their hesitancy to use WhatsApp for formal teaching.

DISCUSSION

The infrastructure and technologic advance in present times has greatly influenced the teaching and learning practice in the field of medical education. Methods of imparting knowledge are also changing constantly [9]. WhatsApp, a primarily communication app, has gained popularity in medical education informally over the last few years because of its easy availability, instant access and ability to transfer high quality images easily. It has been used in both undergraduate and postgraduate settings. There is however, little evidence to support this claim [10].

This study was conducted to gain understanding on the perception of the students and faculty about using WhatsApp as an e-learning method. The perception on e-learning using WhatsApp was done using feedback questionnaire forms. In present study 21 (32%) students were of the opinion that WhatsApp as a teaching tool enhances the educational standards of the undergraduate students. This could be because of instant clearing of doubts, increased interchange of information between peers, deeper clarity of the subject due to the facilitator's moderation of the topic on the WhatsApp group, availability of the resource materials at all times, learning from others and healthy discussions [11].

WhatsApp use is documented in medical literature. Coleman E and O'Connor E, reported that the use of WhatsApp in medicine increases the learner's knowledge as an outcome ('Kirkpatrick level 2') [10]. By extending the functionality of WhatsApp to include it as a teaching tool in medical education has brought fruitful results with majority of the students in favour of it [12]. In this study 29 (58%) students were in agreement that WhatsApp as an online teaching method should be a part of teaching in Dermatology. The sharing of information using this technology of WhatsApp is instantaneous and convenient to the students thereby increasing the peer interaction [11]. By the use of WhatsApp while being part of this study, 27 (54%) students were in agreement to the opinion that it is an effective teaching tool which also increases peer interaction. Many students due to their inherent nature are shy and do not discuss in class during a lecture. In present study, 24 (48%) students felt that the student- teacher interaction increased by implementing WhatsApp for teaching. Similar findings on increase in student-teacher and peer interaction using other non traditional teaching methods have been noted in other studies [7,13].

Smartphones and especially the WhatsApp has become a part of the student's daily essential commodity. WhatsApp messaging has provided a platform for students to exchange photos, videos, information instantly and conveniently anytime, anywhere [10]. WhatsApp messenger is available to all the students, and all times and majority are addicted to this application. It has become a convenient way of acquiring knowledge beyond a traditional classroom setting [7,12]. In this study, 30 (60%) students perceived that WhatsApp is a flexible learning tool in terms of time and place.

During the WhatsApp activity, the students were given CBL modules and they were asked to give differential diagnosis. After 2 days a trigger question was put up on the group, to help the students to reach a final diagnosis and to generate interest in the topic. Various questions were asked to the facilitator related to the study and various emoticons such as clap emoticon, smiley and confused emoticons were also put up by the students to the facilitator. Twenty four (48%) students felt that their interaction with the facilitator had increased. WhatsApp as a good motivator for self-directed learning (SDL) was perceived by 27 (54 %) students to be so. These findings are similar to another study done by Grover S et al., [13]. The new

CBME curriculum already implemented from 2019, promotes SDL as one of the attributes of an Indian Medical Graduate (IMG) as a lifelong learner. This study provides evidence for the judicious use of WhatsApp in conducting SDL sessions in Dermatology [7].

In this study, students were satisfied with the WhatsApp use in Dermatology teaching with 30 (60%) students wanting the faculty to introduce teaching of others topics in a similar model of teaching. A reason for this observation could be that the students are better able to express themselves in a non supervised, non restricted environment as compared to a much more threatening classroom or lecture setting. Dermatology is a highly visual subject and dependent on clinical images most of the times [14]. It is up to us as teachers/facilitators in dermatology and medical education to harness the WhatsApp to our advantage.

In this study majority of the students accepted the use of WhatsApp for learning Dermatology. Thirty (60%) students felt that other topics should also be taught using this learning tool. Medical education learning through WhatsApp is gaining popularity as in the other fields of medicine tool [8]. Twenty nine (58%) students expressed desires to include WhatsApp as an online teaching learning method for dermatology. When a teacher/facilitator is available anytime/anywhere on WhatsApp and the students can do the learning not confined to a classroom would be the main reason for this perception [15]. Facilitator's availability and Learning anytime anywhere were top two advantages of learning through WhatsApp. As with the students, 3 (75%) faculty were also in agreement to use WhatsApp as a teaching tool in dermatology. 75% of the faculty was motivated to implement WhatsApp as a teaching tool. The entire faculty was in agreement that WhatsApp is a flexible teaching learning tool in terms of time and space for the undergraduate teaching. These findings echo the perception of students and teachers as studied by Gon S and Rawekar A, where they found WhatsApp to be a convenient tool for teaching learning especially with the constant availability of a facilitator [11]. This study had provided evidence to utilize WhatsApp as an e-learning tool in Dermatology. It had also minimised hesitation amongst faculty to use social platforms such as WhatsApp in medical education.

Limitation(s)

One of the most limiting factors was the duration of study. Only two learning modules were created for the purpose of the study and the study was conducted on WhatsApp with a small sample size.

CONCLUSION(S)

In this study 54 % students were of the opinion that WhatsApp is a good motivator for self directing learning. 75% of faculty agreed that WhatsApp is a good learning tool, increases teacher-student interaction and is a good motivator to do self-directed learning. As a learning tool it enables the undergraduate medical students to grasp and register visual images of common dermatological conditions and make them confident to diagnose and treat them effectively. It also promotes various teaching learning methods like self-directed learning and cased based discussions in Dermatology. It is a useful tool to enhance interactivity among students and faculty. To check for the efficacy of WhatsApp compared to the traditional ways of teaching, more studies involving a larger study population, more time duration and more topics needs to be done.

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S No.	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	I feel that WhatsApp is a good motivator to do self-directed learning					
2	I feel that other topics in Dermatology should also be taught using WhatsApp					
3	I feel that WhatsApp is helpful in diagnosing common clinical cases					
4	I feel that WhatsApp as an online teaching method should be a part of teaching in Dermatology					
5	I feel that WhatsApp increases learning by increasing peer interaction					
6	I feel that WhatsApp increases the teacher student interaction					
7	I feel that WhatsApp enhances both online and off line learning					
8	I feel that WhatsApp is a flexible learning tool in terms of time and place					
9	I feel that WhatsApp enhances the educational standards of the undergraduate students					
10.	What could be improved?					
11.	Any comments/suggestions?					

ANNEXURE 2**Faculty's perception of online learning using WhatsApp in Dermatology**

S No.	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	I feel that WhatsApp is a good motivator for the undergraduate students to do self-directed learning					
2	I feel that using WhatsApp as a learning tool in Dermatology is a good idea					
3	I will make similar learning modules for other topics in Dermatology					
4	I feel that WhatsApp as an online teaching method should be a part of teaching in Dermatology					
5	I feel that WhatsApp increases the teacher student interaction					
6	I feel that WhatsApp enhances both online and off line learning not only in undergraduate students but also in the faculty					
7	I feel that WhatsApp is a flexible learning tool in terms of time and place for the undergraduate students and faculty alike					
8.	What could be improved?					
9.	Any comments/suggestions?					