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Website: www.jehp.net
DOI: 10.4103/jehp.jehp_609_20

Learning with lockdown: Utility of whatsApp status-based multiple-choice question discussion on COVID-19 among medical students and teaching faculty

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Abstract:

BACKGROUND: Following the COVID-19 pandemic, the Government of India announced lockdown from March 25, 2020, which included measures such as social distancing, canceling mass gatherings, and closure of schools and colleges. Since the present generation of students spends a lot of time on social media, especially WhatsApp, the utility of the same to discuss the various public health domains of COVID-19 through multiple-choice questions (MCQs) was explored.

MATERIALS AND METHODS: This longitudinal study was conducted among 154 participants (undergraduates, interns, postgraduates, and teaching faculty) for 3 months. MCQs on COVID-19 were disseminated through WhatsApp status of the investigator, and feedback regarding the same was taken at the end of 3 months. The activity log was maintained, and the information was downloaded as a comma-separated value (CSV) file and exported to MS Excel. Descriptive statistics were applied. The location of the participants was entered into the Microsoft Excel sheet and converted into CSV file. The Geographical data were analyzed in the Quantum Geographical information System (QGIS).

RESULTS: Among the 154 study participants, 48% were undergraduates, 10.4% were interns, 30.6% were postgraduates, and 11% were teaching faculty. Eighty-nine percent of the participants felt that WhatsApp can be used as a platform for discussing MCQs. 89%, 93%, and 89.6% of the participants felt that the exercise improved their analytical skills, helped in self-directed learning, and improved collaborative learning, respectively.

CONCLUSIONS: Majority of the participants responded that WhatsApp can be used as a platform to discuss MCQs and that the exercise helped in collaborative and self-directed learning.

Keywords:

COVID-19, multiple-choice question, self-directed learning, WhatsApp

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Received: 02-06-2020
Accepted: 16-10-2020
Published: 31-05-2021

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Introduction

In December 2019, a series of pneumonia cases of unknown etiology began to emerge in Wuhan, Hubei province of China, and the World Health Organization was notified on January 3, 2020.^[1] India reported its first case on January 30, a medical student who had returned from Wuhan after the

epidemic started.^[2] The new disease was named COVID-19 on February 11, 2020.^[3]

Lockdown is a measure of restricting personal movement so as to break the chain of transmission. It ensures social distancing and, along with other measures such as isolation and quarantine, hand hygiene, and canceling mass gatherings,

How to cite this article: Doddaiah SK, Kulkarni P, Mohandas A, Murthy MR. Learning with lockdown: Utility of whatsApp status-based multiple-choice question discussion on COVID-19 among medical students and teaching faculty. *J Edu Health Promot* 2021;10:168.

keeps the spread of COVID-19 at check. Further, it prevents increased caseload on health infrastructure and buys time for researchers to develop drugs and vaccines.^[4]

The Government of India announced lockdown from March 25, 2020, which included measures such as canceling public transport, restricting personal movement, social distancing, strict curfew, canceling mass gatherings, and closure of offices, schools, and universities including professional colleges.^[4] Many companies have switched to “work from home” system for their employees, and schools and colleges have shifted to online classes during the lockdown.^[5] India has 542 registered colleges teaching MBBS, which makes it the country with the highest number of medical colleges.^[6] Hence, in the period of lockdown, it is important to ensure the continuity of medical education. E-learning (technology and electronic device based) has been a part of medical education, however, its full spectrum needs to be explored and utilized in this period.^[7]

Smartphones have become an indispensable part of our life, so has mobile learning (M-learning) in medical education. Medical students and faculty can access applications such as Medscape, peer-reviewed journals, and social media networks such as YouTube, Facebook, and WhatsApp, which aids and supplements their learning.^[8] WhatsApp, launched in 2009, is one of the most widely used instant messaging applications with over 1 billion active users per month worldwide.^[9] It is a free messenger application which is available across platforms such as android and iPhone. It allows instant messaging, group chats, and to share and download multimedia messages. WhatsApp is a learner-friendly application which helps students and teachers to create, communicate, and share information in real-time.^[10,11]

While it is necessary to keep the learning process ongoing, it is also important that the students and staff be kept informed on the updates on COVID-19 while trying to keep it interesting. Hence, in this study, we try to assess the utility of WhatsApp status-based multiple-choice question (MCQ) discussion on COVID-19 among medical students and teaching faculty and to assess their perceptions on the same.

Objectives

1. To assess the utility of WhatsApp status-based MCQ discussion on COVID-19 among the medical students and teaching faculty
2. To assess their perception on learning through MCQ-based discussion through WhatsApp status
3. Geospatial distribution of participants.

Materials and Methods

Subjects

The present longitudinal study was conducted among medical students, interns, postgraduates, and teaching faculty for a period of 3 months after obtaining clearance from the institutional ethics committee.

Designing of multiple-choice questions

Keeping in mind the principles of epidemiology, management, prevention, and control of nCOVID-19, the MCQs were framed by the experts who have formally received training in designing and implementing MCQs through medical education unit. Each MCQ was prepared with a stem and four responses, out of which one was the right answer and three were distractors. A mix of questions at different cognitive levels of Bloom’s taxonomy was framed to enhance the learning and understanding of the participant. Recall-based, case scenario-related, calculation-based, picture-based questions were framed. Each MCQ framed by the faculty was validated by the other faculty member before releasing for the students to respond.

Dissemination of multiple-choice questions through WhatsApp status

MCQs framed through the above mentioned technique were disseminated to the study participants through WhatsApp status of principal investigator. One MCQ per day strategy was used for the ease of responding and sustaining the motivation level of students. Students had sufficient time to understand the question and refer to the relevant resources before responding to the question. The participants were invited to discuss any doubt, query, or clarifications in the process of solving the MCQ with the faculty. The correct answer to the MCQ was displayed on the same WhatsApp status wall 24 h after the release of question. The activity log of the status with number of participants attempting the activity was maintained.

Feedback

After 3 months of this sustained educational experience, feedback was obtained from the participants using a pretested semi-structured questionnaire through online Google survey proforma. The items in the questionnaire were prepared based on the literature search and cognitive interview with experts and students. The hence prepared draft questionnaire was face and content validated by the experts. A pilot study was conducted among postgraduate students to assess the correctness and comprehension of items in the questionnaire.

Items in the feedback questionnaire

Feedback questionnaire had items to capture information on the designing of MCQs, difficulty level, whether

they helped the students in preparing for competitive examinations, provoking the thought process, ability to comprehend with items, whether the exercise facilitated self-directed learning, encouraged motivation to learn, and collaborative learning.

Collection of information

The link of questionnaire was shared on the same WhatsApp status wall where the MCQs were posted and the response from the participants was collected. The survey was kept active for 1 week from the starting date to provide enough time for the participants to complete the task.

Geospatial analysis

The location of the participants who took part in the online “COVID-19: Novel Coronavirus MCQS” WhatsApp status discussion has been entered into the Microsoft Excel sheet and converted into a comma-separated value (CSV) file which is a delimited text file that uses a comma to separate values. The geographical data were analyzed in the Quantum geographical information system (QGIS), a free and open-source geographic information system version QGIS 3.12.3 “Bucuresti” which was released on May 15, 2020. It is an open-source software available under the terms of the GNU General Public License.

Statistical analysis

The information was downloaded in the form of a CSV file and then transferred to MS Excel 2010 for analysis. Descriptive statistical measures such as percentage, mean, standard deviation, median, and interquartile range (IQR) were applied. Data were presented as table/ graphs as relevant.

Results

A total of 154 participants took part in the study. The average age of the participants was 25.3 ± 7 years. The participants had been using WhatsApp for an average of 5.4 ± 2 years. The median time of usage of WhatsApp by the participants was 1.5 h (IQR of 1–3 h) per day, and the median number of times the participants checked the WhatsApp status was 5 (IQR of 3–8) per day. Forty-four percent of the participants were males and 56% were females.

Among the 154 study participants responding to the feedback survey, 48% were undergraduates, 10.4% were interns, 30.6% were postgraduates, and 11% were teaching faculty. 55.8% and 38.3% of the participants suggested WhatsApp group and WhatsApp status as the preferred platforms to discuss MCQs, respectively. 63.7% of the participants were from Karnataka, and the other participants hailed from

Kerala (9.2%), Uttar Pradesh (6.5%), Tamil Nadu (5.8%), New Delhi (5.8%), and other states [Table 1].

Figure 1 represents the geospatial distribution of participants in the study. The feedback obtained from the participants at the end of 3 months of MCQ discussion is represented in Table 2. The participants rated the exercise on a scale of 1–10 (1 being the lowest and 10 being the highest); 97.4% and 2.6% of the participants gave a score of >5 and ≤ 5 , respectively.

On analysis of feedback obtained on Likert scale, 89% of the participants felt that WhatsApp can be used as a platform for discussing MCQs. 78.6% felt that the MCQs helped in preparing for competitive examinations, and 82.5% said it enhanced their confidence to face such examinations. 89%, 93%, and 89.6% of the participants felt that the exercise improved their analytical skills, helped in self-directed learning, and improved collaborative learning, respectively. Eighty-nine percent of the participants said that the moderator would attend to their queries as and when approached, and 95% said that the moderator was open to remarks/comments/suggestions. 96.7% suggested that similar activities should be continued [Figure 2].

Table 1: Distribution of participants based on the demographic details and the platform suggested for discussing multiple-choice questions (n=154)

Variable	n (%)
Gender	
Male	68 (44)
Female	86 (56)
Designation	
Undergraduate	74 (48)
Intern	16 (10.4)
Postgraduate	47 (30.6)
Teaching faculty	17 (11)
State-wise distribution of participant	
Karnataka	98 (63.7)
Kerala	14 (9.2)
Tamil Nadu	9 (5.8)
Andhra Pradesh	1 (0.6)
Uttar Pradesh	10 (6.5)
New Delhi	9 (5.8)
Gujarat	1 (0.6)
Rajasthan	3 (2)
Haryana	5 (3.2)
Jharkhand	1 (0.6)
Telangana	2 (1.4)
West Bengal	1 (0.6)
Suggested platform for discussing MCQs	
WhatsApp status	59 (38.3%)
WhatsApp group	86 (55.8)
Telegram	6 (3.9%)
Webex	3 (2)

MCQ=Multiple-choice questions

Table 2: Feedback given by the participants (n=154)

Item	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
WhatsApp can be used as a platform to study MCQs	66 (42.8)	71 (46.3)	15 (9.7)	1 (0.6)	1 (0.6)
WhatsApp status of MCQs enhanced my preparation for entrance examinations	39 (25.3)	82 (53.3)	31 (20.1)	2 (1.3)	0
MCQs improved my analytical skills	52 (33.8)	85 (55.2)	17 (11)	0	0
They helped me in self-directed learning	53 (34.5)	90 (58.4)	10 (6.5)	1 (0.6)	0
They helped me to enhance my ability to retrieve and utilize the information	55 (35.8)	86 (55.8)	12 (7.8)	1 (0.6)	0
It increased my motivation to learn	57 (37)	80 (51.9)	14 (9.1)	3 (2)	0
It encouraged collaborative learning and participation	55 (35.7)	83 (53.9)	14 (9.1)	2 (1.3)	0
I got an update about the disease in a structured manner	65 (42.2)	74 (48.1)	15 (9.7)	0	0
The knowledge gained through this approach has enhanced my confidence to face entrance examinations	44 (28.5)	83 (54)	24 (15.5)	3 (2)	0
These questions made me visit resources other than textbooks to gain additional information	38 (24.7)	98 (63.6)	16 (10.4)	2 (1.3)	0
I used to curiously wait for what questions will be posted for the day	43 (27.9)	81 (52.6)	24 (15.6)	6 (3.9)	0
Moderator could solve the doubts as and when I approach	54 (35)	83 (54)	16 (10.4)	1 (0.6)	0
The answers to the questions were logical	52 (33.8)	95 (61.6)	3 (2)	1 (0.6)	3 (2)

MCQ=Multiple-choice questions

attending final-year surgery rotation in Pakistan, where majority of them agreed that WhatsApp-based case discussion was a motivation for learning and Oyewole *et al.*, where 83% of the participants preparing for a licensing examination agreed that WhatsApp-based discussion increased their motivation to learn.^[15,16] Roy and Ray reported that 82% of the students felt that WhatsApp-based learning “provoked them to search other resources” which indirectly promoted self-directed learning.^[12]

89.5% of the participants in the present study felt that the activity encouraged collaborative learning and participation. Oyewole *et al.* also reported similar findings in their study, where 80% of the participants said that WhatsApp-based discussions helped in collaborative learning.^[16] The present study findings suggest that majority of the participants (89%) felt that it is possible to clear the doubts as and when they approach the instructor. Similar findings were observed by Gon and Rawekar who reported that 73% of students said that doubts could be cleared immediately in WhatsApp-based learning.^[10] 96.7% of the participants in the present study suggested that similar activities should be continued which were similar to the findings of Indu *et al.* among 3rd-year BDS students, where 94% of the study participants expressed the need of social media-based learning to continue along with conventional methods.^[17]

Limitation

The study being WhatsApp status based was open to attempt by the participants on a voluntary basis. Hence, we could not reach all the students and faculty from the institution. Furthermore, the queries were clarified

between the moderator and the enquirer, and it was a limitation of this method that we could not conduct group discussions on these queries.

Conclusions

The findings of the present study indicate that the sustained involvement of the medical student through WhatsApp-based MCQ discussion could enhance the collaborative and self-directed learning attributes. These discussions motivate students to gather the information, retrieve it, and utilize for their future benefits like preparing for competitive examinations. We recommend multidisciplinary approach of conducting such intervention through various departments in medical college for the career guidance and advancements of medical students.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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