Knowledge and attitudes towards the novel coronavirus (Covid-19) among health care college students in Makkah, Saudi Arabia

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General Note

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ABSTRACT

Background: The COVID-19 flare-up is now a worldwide pandemic. Regulation of the flare-up requires the best of general wellbeing activities and aptitudes. Slips up will happen due to the human instinct of both those contaminated and the wellbeing responders themselves. Significant for all who are giving wellbeing and clinical administrations during this occasion is to perceive the wide effect of such an infection flare-up. It is important to comprehend the worries of the individuals who must help the endeavors to contain the flare-up, including the political, monetary, and social effects of each activity required in the general exertion to help worldwide security corresponding to COVID-19. *Objective:* We aimed to investigate the knowledge and attitude of health care college students towards Covid-19 in Makkah, Saudi Arabia. This analysis of data from that region on student's recognition and aviation to the state of preventing and controlling of (Covid-19) that can be beneficial in implementing awareness and educational programmes about this disease. *Methods:* The study type was a cross-sectional that was conducted on health care college students in Umm Al-Qura

University at Makkah. The study design was a questionnaire containing knowledge and attitude items was completed by 750 participants. *Results:* In general,> 90% of the health care students recognised Covid-19 aetiology, mode of transmission, risk factors, and signs and symptoms. Knowledge scores showed that 91% of participants had enough knowledge. Medical and nursing undergraduates had significantly better knowledge compared with other health care college students (p = 0.001). Concerning attitude, > 90% of health care students revealed a positive attitude toward Covid-19. *Conclusion:* Health care college students showed an increased level of knowledge and positive attitude toward Covid-19. There was an observable distinction in knowledge level between different colleges. However, regular informative involvement and expert efforts are up to the present time required.

Keywords: Covid-19; health care college students; knowledge; attitudes, infection control.

1. INTRODUCTION

Coronaviruses are non-segmented enveloped positive sense RNA viruses that is related to Coronaviridae family and Nidovirales order (Yi et al., 2020). It is one of the major pathogens that triggered a great public health threat called corona virus disease (COVID-19), which mainly target the human respiratory system and cause pneumonia of unknown aetiology (Price et al., 2020; Lie et al., 2020).

In December 2019 the emergence of the novel 2019 coronavirus was started in Wuhan, China and within one month the infection hurriedly spread across China and other countries, and according to WHO around 43,000 patients in 28 countries was affected by COVID-19 (Chen et al., 2020; Lai et al., 2020; Xu et al., 2020). On 30th January 2020, the WHO declared the event established a Public Health Emergency of International Concern (PHEIC) indicating that coronavirus infections posed a global health disaster (Xu et al., 2020; Soharbi et al., 2020)

COVID-19 associated symptoms can occur after the incubation period of about five to seven days (Aruru et al., 2020). The age of the patient and status of the patient's immune system could affect on the period from the onset of COVID-19 symptoms to death and it is ranged from 6 to 41 days (Price et al., 2020). This period could be shorter among patients more than 70 years old than the patients under 70 years old (Price et al., 2020). Fatigue, fever, dry cough, headache and sputum production are the most common systemic disorders in COVID-19 illness (Bleibtreu et al., 2019; Bonyan et al. 2020). In COVID-19 the respiratory disorders include rhinorrhoea, sneezing, sore throat, pneumonia and ground-glass opacities.[1]It has been reported that the origin of COVID-19 infection is the direct contact with infected people that were exposed to the wet animal market in Wuhan city (Price et al., 2020).

The pathophysiological features of COVID-19 are not well defined and there is grate hesitantly regarding its mechanism of spread (Rothe et al., 2020). The information available currently is mainly derived from similar Coronaviruses, which are transmitted between the humans through the respiratory system (Rothe et al., 2020). Normally the respiratory viruses are most contagious when a patient is symptomatic. However, the evidences suggested that the virus transmission from human-to-human could be happening during the asymptomatic incubation period of COVID-19, which has been expected to be between 2-10 days (Li et al., 2020).

According to WHO and US Centres for Disease Control and prevention (CDC) avoiding travel to high-risk areas, contact with individuals who are symptomatic is highly recommended to prevention spreading for COVID-19. In addition, basic frequent hand washing and using facemasks are also recommended (Soharbi et al., 2020).

Currently, a randomized multicentre controlled clinical trial is ongoing to find an effective and safe antiviral vaccine or treatment for COVID-19 (Wang et al., 2020). Antipyretic therapy such as Paracetamol is the first line treatment for fevers, whilst for a non-productive cough expectorant such as guaifenesin could be used (Soharbi et al., 2020).

2. METHODS

Sample

This cross-sectional, descriptive study of a representative group of health care college students (medicine, pharmacy, nursing, and medical science students) at Umm Al-Qura University. The research was performed on February 2020 in compliance with the International Recommendations for Improving the Documentation of Observational Studies in Epidemiology; STROBE (Strobe, 2014). The sample size required for the study was estimated at 750, based on an average previous estimate of 54 per cent of Middle East respiratory syndrome awareness among Saudi health workers (De Groot et al., 2013), with an absolute accuracy between 2 per cent and 95 percent. For distribution a random sample was used. The stratification factors taken into account were age, sex, type of medical college specialization and relative number and size of medical college facility. The research adopted the values set out in the Helsinki Declaration. From all of the members an oral consent turned into completed.

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Study design and Questionnaire interview

A uniform questionnaire was circulated and answered by all participants in their health care colleges. The questionnaire, with some changes, was built using frequently asked questions from the WHO and the Saudi Ministry of Health website (Asaad et al., 2020).

The questionnaire was written in English, the questionnaire was piloted on 35 health care college students (10 medical college, 16 pharmacy college and 7 nursing college) who were not included among the study participants in order to assess the acceptability and consistency of the questions and to validate the validity of their faces; it was then updated accordingly.

The questionnaire consisted of three sections dealing with the awareness and mindset of health-care College students about Covid-19. The first part covered demographic data such as age, sex, current employment and the participants' information source for Covid-19 (6 items). The second section evaluated the awareness of medical college students by asking questions about aetiology, incubation time, symptoms, risk groups, consequences, source of transmission, prevention and treatment of Covid-19 (11 items). A score system was used to determine the level of knowledge of each subject as previously used (with some modifications [17]; 2 points for each correct answer, 1 point for an incorrect answer. A minimum of ≥ 12 points (≥ 60 per cent of minimum marks) was considered to have adequate information. Participants were divided into two groups according to their level of knowledge: inadequate (< 12 points) and adequate (≥ 12 points). The third part of the questionnaire evaluated the attitude of health-care college students to Covid-19 using a collection of 8 yes / no questions (Figure 1).
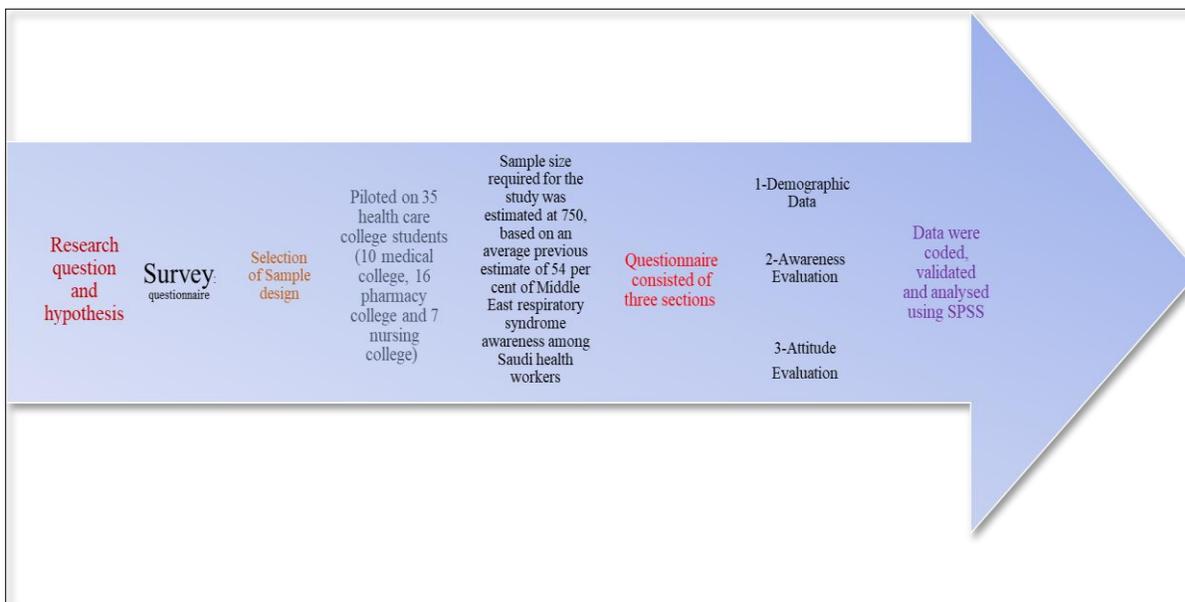

Figure 1: Methodology flow chart

Statistical analysis

Data were coded, validated and analysed using SPSS, version 22. To present the data we used frequency and proportion from the results. Chi-squared was used as the test of significance at the 5% level.

3. RESULTS

A total of 750 health care college students completed the questionnaire, with a response rate of 99.8%. The age range of participants was between 18-23 years, the median (IQR) was 20.5 years and the mean were 20.5 years (standard deviation 1.9).

The study group included 350 (46.6%) pharmacy students, 190 (25.3%) medical students, 120 (16.0%) nursing student and 90 (12.0%) medical science students.

More than half of the respondents 456 (62%) felt that they had adequate knowledge about Covid-19. The key sources of Covid-19 information were websites of the Ministry of Health 600 (80.0%) and social media 150 (20.0%).

Table 1 indicates the current status of Covid-19information among health care college students. The majority, 719 (95.8%), were aware that the disease is a viral infection, 726 (96.8 %) were familiar with its mode of transmission and 730 (97.3%) with the signs and symptoms. The majority of participants accepted that patients with chronic illnesses and old age [660 (88.0%)] and health care

students and workers [640 (85.3%)] are at a higher risk of infection. However, the participants' knowledge about questions related to Covid-19 vaccination, treatment by antibiotics, diarrhoea as a possible symptom, and the incubation period was poor.

Table 1. Knowledge about Covid-19 among health care college students, Makkah, 2020

Question (correct answer)	Correct answer No. (%)
Covid-19 is a viral infection (Yes)	719 (95.8%)
Covid-19 spread by close contact with infected person or animal (Yes)	726 (96.8 %)
Fever, cough and shortness of breath are symptoms of Covid-19 (Yes)	730 (97.3%)
Diarrhoea is a possible symptom of Covid-19 (Yes)	233 (31.0%)
The incubation period is 2–6 weeks (No)	260 (34.6%)
There is a vaccine available in markets for Covid-19 (No)	455 (60.6%)
Antibiotics are the first-line treatment (No)	465 (62.0%)
Washing hands with soap and water can help in prevention of disease transmission (Yes)	713 (95.0%)
Patients with underlying chronic diseases and old age are at a higher risk of infection (Yes)	660 (88.0%)
Health care students and workers are at a higher risk of infection (Yes)	640 (85.3%)
Covid-19 could be fatal (Yes)	750 (100%)

Table 2. Distribution of knowledge scores among health care college students in Makkah, 2020

Characteristics	Sufficient knowledge (n = 416) No. (%)	Insufficient knowledge (n = 404) No. (%)	Total (n = 750)	P-value
Sex				
Male	189(67.5%)	91(32.5%)	280	
Female	350 (74.4%)	120(25.5%)	470	0.001
Age (years)				
19-20	110 (35.4%)	200(64.5%)	310	0.001
21-22	214 (97.3%)	6 (2.7%)	220	
22-23	124 (56.3%)	96 (43.6%)	220	
College				
Medicine	320 (91.4%)	30 (8.5%)	350	0.001
Pharmacy	80 (42.1%)	110(57.8%)	190	
Nurse	110 (91.6%)	10 (8.3%)	120	
Medical science	10 (11.1%)	80 (88.9%)	90	
Presence of animals				
No	32 (61.5%)	20 (38.4%)	52	
Yes	392 (56.0%)	306(43.8%)	698	0.001
Don't know	0	10 (100)	10	
Do you have Sufficient knowledge about Covid-19?				
Yes	324 (68.1%)	152(31.9%)	476	0.002
No	192 (70.0%)	240(30.0%)	274	
Don't know	0	0	0	
Have you had previous contact with Covid-19 patients?				
Yes	22 (20.0%)	88 (80.0%)	110	0.028
No	340 (53.1%)	300(64.9%)	640	

Table 3. Attitude of health care college students towards Covid-19, Makkah, 2020 Item (correct answer)

	Response No. (%)
Are you worried one of your family members may get an infection?	
Yes	522 (69.5%)
Transmission of Covid-19 can be prevented by using standard and isolation precautions given by CDC, WHO, APIC, etc.? (Yes)	
Yes	720 (96%)
Prevalence of Covid-19 can be reduced by active participation of health care worker in hospital infection control programme? (Yes)	
Yes	554 (73.8%)
If a Covid-19 vaccine were available, would you have it?	
Yes	583 (77.8%)
Intensive treatment should be given to diagnosed patients? (Yes)	
Yes	711 (94.9%)
Health care students and workers must avail themselves of all information about the virus? (Yes)	
Yes	696 (92.9%)
Is the available information about Covid-19 in Saudi society sufficient?	
Yes	739 (89.6%)
Are the government institutions able to control the epidemic?	
Yes	746 (99.5%)

CDC = Centres for Disease Control and Prevention,
WHO = World Health Organization,
APIC = Association for Professionals
in Infection Control and Epidemiology.
All respondents answered either yes or no.
There were no missing values or don't know responses.

In table 2 we demonstrated the scores knowledge in correlation to the baseline characteristics of the participants. In general women had statistically significantly greater knowledge than men (P = 0.001, Figure 3). Adequate information was significantly correlated with age (P = 0.001, Figure 4). Moreover, medical college and nursing college students had significantly greater knowledge compared with other health care students (P = 0.001, Figure 2).
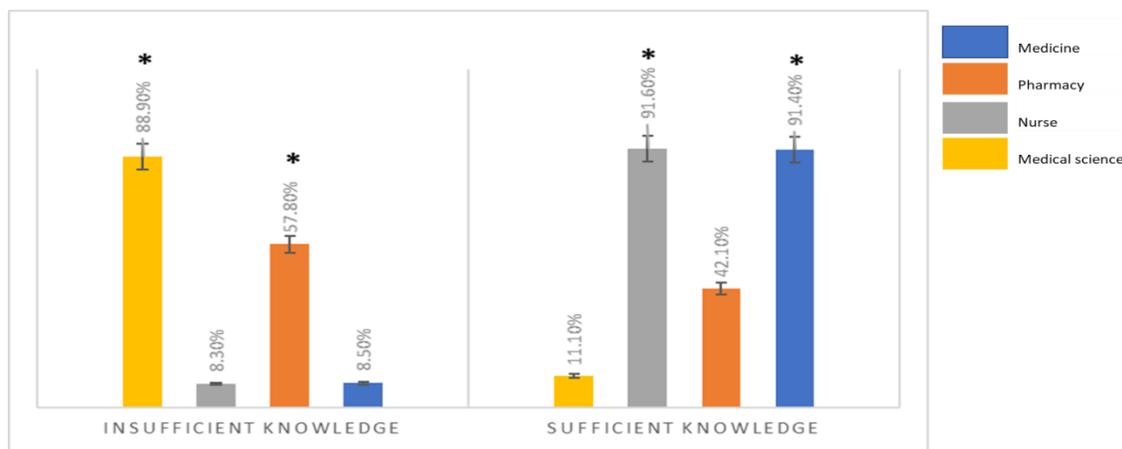

Figure 2: Bar-chart representing the distribution of knowledge scores among different health care students from Medicine, Pharmacy, Nurse and Medical science colleges in Makkah, 2020. *P < 0.05.
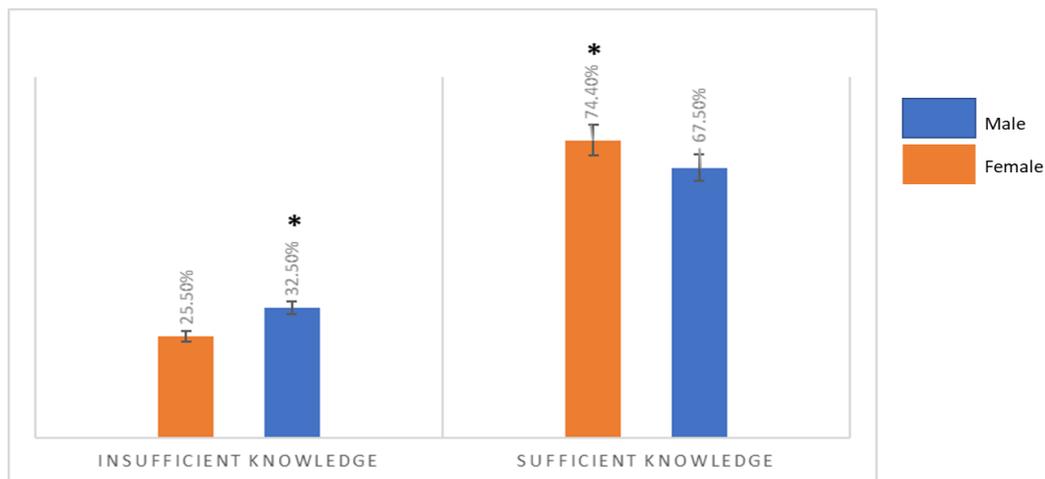
Figure 3: Bar-chart representing the distribution of knowledge scores among different health care students between males and females in Makkah, 2020. $^*P < 0.05$
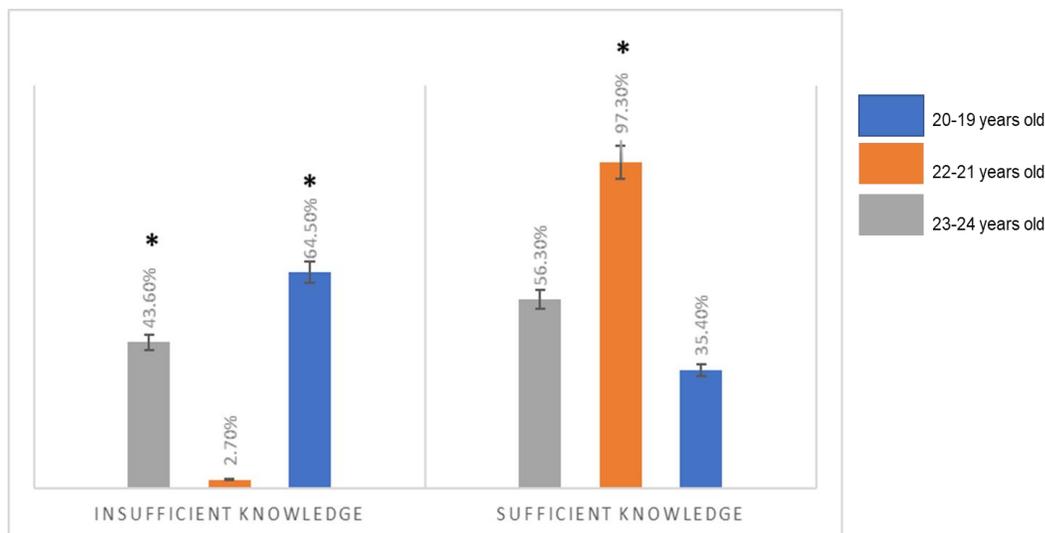

Figure 4: Bar-chart representing the distribution of knowledge scores among different health care students from different age groups colleges in Makkah, 2020. $^*P < 0.05$

Over 90% of health care college students exhibited a positive attitude toward Covid-19. The majority of participants (96%) knew that Covid-19 infection could be prevented by using isolation and standard precautions. Besides, 89.6% felt that the information in Saudi society was sufficient to deal with Covid-19 and 99.5% that their health care institutions in Saudi Arabia would be able to control any emerging Covid-19 epidemic (Table 3).

4. DISCUSSION

Many studies have examined the various levels of knowledge towards the MERS-CoV outbreaks in various regions in Saudi Arabia (Novel, 2020). However, to the best of our knowledge, there are no previous reports of similar studies on the novel (Covid-19) in Saudi Arabia. Therefore, we investigated health care college students' knowledge and attitude towards Covid-19 at Umm Al-Qura University in Makkah, Saudi Arabia.

The present study revealed that awareness of Covid-19among health care college students in Makkah population is generally good. This can be related to the multiple awareness campaign that were done by the Ministry of Health as well as multiple medical colleges. Moreover, the social networks, and social communication were the most cited sources of information on Covid-19 infection (Chen at al., 2020). The importance of our findings is that the sample covered the student population with reasonable validity and precision, as the research was voluntary, by means of personal interview methods.

It is important to note that while most of the respondents were aware of the nature, communicability and lethal effects of the disease, a small proportion of the respondents still had good ideas about the mode of transmission. For example, almost half of the respondents were aware that the corona is transmitted by animals. We considered this percentage to be inadequate and to increase public awareness of the students in Makkah, particularly those who live in rural areas around it, this should be taken seriously. On the other hand, about 65 per cent of the respondents knew that the disease could be transmitted by direct personal contact, and there was also significant knowledge of the transmission of the virus by diarrhea by the infected person.

Good knowledge of the clinical picture of Covid-19 is essential for the diagnosis of the disease, for correct measurements and for the prevention of life-saving outbreaks. Although half of the respondents knew that Covid-19 could be described by lower and upper respiratory symptoms, the other half did not know that general gastrointestinal symptoms could develop. Nevertheless, this is important, because it leads to early health-seeking actions. For this purpose, regular educational presentations by experts to demonstrate the stage and clinical image of the disease would be helpful for disease control.

Our results additionally demonstrated that the Ministry of Health followed by internet-based life and network correspondence spoke to the most referred to wellsprings of data on Covid-19 sickness. Strikingly, just a little extent of the respondents referred to the college clinical battle, self-learning, and family members of tainted people as wellsprings of data. This plainly demonstrated the viability of legislative general wellbeing instruction programs just as innovation in expanding the information and attention to the infection. In this manner, college clinical staff and understudies ought to boost their job in mindfulness crusades just as in investigate viewpoints. Regardless of the investigation discoveries, we recognize its restriction (Almutairi et al., 2015). The low reaction rate, potential example bunching and factual blunders because of various centrality testing may restrict the generalizability of the outcomes (Almutairi et al., 2015).

We found that there was variability among health care college students in their knowledge level. For example, participants from the medical and nursing college had greater levels of sufficient knowledge than those from pharmacy or medical science college.

Many healthcare college students who have had prior interaction with contaminated patients have demonstrated a high degree of lack of information, which is an alarming outcome and underlines the value of health-care authorities creating awareness strategies for patient contacts, which can involve their health-care team managers.

In general, most participants had a positive attitude towards active involvement in infection control programs and the role of guidelines in the prevention of infection. They believed in the government's ability to control the epidemic. Ironically, 30.7% had negative attitudes towards vaccination. It may be clarified by a lack of information on the preventive position of the active immunization.

In our examine we faced some limitations. First, the data from the questionnaire may have been subject to bias recall and misclassification. Nevertheless, we should assume that health care college students would have the requisite medical expertise to respond correctly to all questionnaire items. Second, our analysis was confined to the western area of Saudi Arabia, so the findings presented here cannot be generalized. Finally, there is a potential drawback to the lack of clear knowledge on the attitude of health care college students towards Covid-19. Further large-scale studies from other regions of Saudi Arabia are therefore necessary to further explore the understanding and attitudes of health-care students and professionals at the national level.

5. CONCLUSION
In conclusion health care college students showed an increased level of knowledge and positive attitude toward Covid-19. There was an observable distinction in knowledge level between different colleges. However, regular informative involvement and expert efforts are up to the present time required.

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Conflict of Interest:

The authors declare that there are no conflicts of interests.

Informed consent:

Oral informed consent was obtained from all individual participants included in the study.

Ethical approval:

The study was approved by the Medical Ethics Committee of Umm Alqura University (ethical approval code: (HAPO-02-K-012-2020-08-401).

Data and materials availability:

All data associated with this study are present in the paper and available upon requested.

Paper context

As Covid-19 becoming a global epidemic, researchers towards attitude and knowledge especially in health care students will be of great beneficial towards the society in the concept of education and awareness. We found a great level of knowledge and good acceptable attitude toward Covid-19. However, there was an observable distinction in knowledge level between different colleges. For the future, more regular informative involvement and expert efforts are required.

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