



## Impact of health education programs on prevention of Coronavirus in Makkah city

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### ABSTRACT

It is well-known that public health education plays a crucial role in the prevention and control of emerging infectious diseases like corona-19. This study aims to evaluate the impact of health education in Makkah city during covid-19 pandemic (This study explores the impact of health education on people knowledge and behaviors toward corona virus and determines the factors affecting covid-19 knowledge and behaviors among people in Makkah City). A cross-sectional descriptive study was performed in nine public health centre (PHC) in holy Makkah city, Saudi Arabia from 2012 to 2013. Nine PHCs representing west, east, south, and north of the city of Makkah Al-Mukarramah, The health centers that were randomly selected are as follows (Al-Iskan PHC, Al-Muqrah PHC, Al-Hindawiyah PHC, Al-Maabdah PHC, Hadda PHC, Jarwal PHC, Al-Nawaria PHC, Al-Shara'a 7 PHC, and Al-Malawi PHC. 450 questionnaires were distributed to the participants (225 questioners for both genders). Data collection included the following: (1) sociodemographic characteristics of the participants, (2) effect of educational method on knowledge and behaviors toward Covid-19. Gender and education level affected participant behaviors toward covid-19. The study outcome will help the health policy makers to take appropriate measures to prevention and control of Covid-15 in Saudi Arabia.

## Introduction

Health education is one strategy for implementing health promotion and disease prevention programs. Health education provides learning experiences on health topics. Health education presents information to target populations on particular health topics, including the health benefits/threats they face, and provides tools to build capacity and support behavior change in an appropriate setting (Algharbawi & Ibrahim, 2002; Christopher H. 1992).

Health enlightenment simply means eradicating the illiteracy of the individual in terms of health, that is, providing him with a minimum of information, skills, attitudes, and behavior patterns that guarantee him a state of safety and physical health. The psychological, mental, and social, which enables that individual to protect himself and his surrounding environment from exposure to any health disorder, and gain the ability to face what he may be exposed to health problems, and the ability to make the correct decision about them. This means that the individual is not healthy unless he possesses

that minimum of health experiences (information, skills, attitudes, patterns of behavior).

Health literacy is often indicated to accommodate an individual approach by substituting the three domains of health "healthcare, disease prevention, and health promotion" with "being ill, being at risk, and staying healthy" (Sørensen et al., 2012). Among the preventive health programs, health education cannot prevent health of any member of the community unless these individuals have minimal health education (Alabid et al, 2009)

Health education is a translation of health information and the facts and turns them into behavioral patterns right on the individual and society using modern education methods for the advancement of health and social level of all members of society (Alsafdi & Abohoug, 2002).

Makkah is the holiest city in Islam, the capital of the Mecca Province of Saudi Arabia and the level of socioeconomic development and education and health resources are better than other areas. This paper aims to evaluate the effects of a comprehensive health education intervention project on Covid-19 in Makkah. Healthcare is provided by

the Saudi government free-of-charge to all pilgrims. There are ten main hospitals in Makkah. Impact of health education on knowledge and behavior of people working in the Health care centers are important to provide service and disseminate knowledge for prevention and control of Covid-19.

## **Materials and Methods**

### **Study design**

This research is a cross-sectional study designed to evaluate the effects of health education on knowledge and behaviors of people working in health care center in Makkha city toward Covid-19.

### **Study area and sampling**

The target population of this study comprised personnel working in different public health care centres in Makkha city. The city is 70 km (43 mi) inland from Jeddah on the Red Sea, in a narrow valley 277 m (909 ft) above sea level. Its population is 1,578,722 in 2015. The estimated metro population in 2020 is 2.042 million, making it the third-most populated city in Saudi Arabia after Riyadh and Jeddah. During Hajj on average 2-4 million Muslims arrive in the city to take part in the rites known as Hajj.

Healthcare is provided by the Saudi government free-of-charge to all pilgrims. There are ten main hospitals in Mecca- Ajjad Hospital, King Faisal Hospital, King Abdulaziz Hospital, Al Noor Specialist Hospital Hira'a Hospital, Maternity and Children's Hospital, King Abdullah Medical City, Khulais General Hospital Al Kamel General Hospital, Ibn Sina Hospital.

### **Instrument**

A self-designed questionnaire was used to assess knowledge and behaviors of sampled participants toward Covid-19. The questionnaire consisted of three parts: (1) selected participants demographic information in sample areas, (2) questions related to covid-19 knowledge, and (3) questions concerning behaviors for preventing covid-19. Various options were used to assess participants' responses to each question. A pilot study was conducted on both male and female workers in the health care centres; modifications of the instrument and method were accordingly performed.

It includes ten questions, seven questions were closed and three open-ended questions. In the first, second and third questions many educational tools like, (tv, radio, publishers, internet, road signs, field visits, exhibitions, mobile, online lectures and seminars,) were selected. The third, fifth, sixth, seventh, ninth and tenth questions were on happy and unhappy health services got by the participants. While the fourth question was selected as yes or no.

### **Data collection**

After obtaining official permission from various health care centres, we carried out health education program on Covid-19 from July 2020 to December 2020. We held the program, with topics focusing on (like playing promotional cartoons of covid-19 awareness, implementing lectures by professional medical staff, releasing handbook copies on corona virus and organizing group discussion etc.)

Before the health education intervention, we did not collect any data related to covid-19 knowledge and behavior of the participants. Six months after the implementation of the health education intervention we collected the response from the participants.

### **Data analysis**

Data entry was performed using Microsoft Excel 2010 (Microsoft Office, Redmond, WA, USA) and represents as table and figures. Sociodemographic characteristics of sample students were defined through descriptive statistics (Alzoghbi & AlTalvah, 2000).

### **Ethical approval**

This research was approved by Local Committee for Research Ethics All participants indicated their willingness to participate in this survey.

## **RESULTS AND DISCUSSION**

### **Age of the respondents**

The age of the both male and female respondents in Iskan PHC ranged from 10 to over 45 years. Among them 10-16 years respondents males were 2% and females 10%, among 17-30 years males were 24% and females 18%, among the age of 31-45 years males 18% and females 12%. Whereas among age over 45 years males 10% and females 8%.

In Al-Muqrah PHC there were different age group participants of which men with 10-16 years age were 0%, 17-30 years 12%, 31-45 years 26%, and over 45 years were 12%,. On the other hand women of 10-16 years old were 2%, from 17-30 years it was 22%, 31-45 years 20% and from above 45 years 6%.

Among the participants from Al-Hindawiyya PHC the age of male with 10-16 years was 2%, 17-30 years 16%, 31-45 and over 45 were 16%. The female participants with their ages were 0%, 6%, 22%, 22%, respectively.

The participants of the Al-Maabdeh PHC with age of 10-16 years was 0%, 17-30 years 26%, 31-45 years 20% and over 45 years 6%, while women of 10-16 years 14%, 17-30 years 18%, 31-45 years 12% and over 45 years 6%.

In Jarwal PHC the participants with 10-16 years age was 0%, 17-30 years 8%, 31-45 years 34), over 45 years 0%. While women with 10-16 years age was 0%, 17-30 years 0%, 31-45 years 2 % and above 45 years 0%.

In Hadda PHC, the men with 10-16 years age was 4%, 17-30 years 26%, 31-45 years 12%, over 45 years 8%, while women from 10-16 years were 2%, 17-30 years 16%, 31 -45 years 22%, 10%.

Regarding the ages of Al Nawariah PHC patients, their percentage was 0% for 10-16 years, 6% for 17-30 years, 18% for 31-45 years and 6% for above 45 years. On the other hand the percentage was 0%, 12%, 8%, 28% respectively for the age groups.

In Al Shara'a PHC, the percentage of male peoples with 10-16 years was 6%, 17-30 years 8%, 31-45 years 22%, and over 45 years 18%. While the percentages of female people with different age groups were 6%, 10% 20% 14% respectively.

In the Malawian health center male participants with 10-16 years was 4%, 17-30 years 16%, 31-45 years 30% and over 45 years 4%. Whereas women participants were 0%, 24%, 18%, 6% with different ages respectively

### Educational level

The educational level of both male and female varied PHC to PHC (Table 1). Almost all the participant had above primary education except 12% male and 10% female in Shara' 7, 4% male and 8% female in Nawaria PHC and 2% male in Malawi PHC. Participants had medium education in all PHCs and which was above 6% with highest percentage of male (30%) in Malwi PHC and female (16%) in Hidawiyah and Shara'a 7 PHCs. Secondary education was recorded in all PHCs with higher percentages than medium education. The highest percentage of male (40%) was observed in Iskan PHC and female (38%) in Malawi. The participant with university education (graduation) was more in Jarwal PHC followed by Maabdah PHC. Very few participants were with post-graduation with highest percentage in Muqrah PHC followed by Jarwal PHC.

**Table 1:** Educational level of men and women in the PHCs

PHCs	Primary		Medium		Secondary		Universal		Postgraduate	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Iskan phc	0%	0%	6%	6%	40%	20%	6%	12%	0%	0%
Muqrah phc	0%	0%	4%	6%	22%	22%	6%	4%	18%	8%
Hindawiyah phc	0%	0%	12%	16%	16%	16%	22%	16%	0%	2%
Maabdah phc	0%	0%	2%	14%	22%	20%	24%	18%	0%	0%
Jarwal phc	0%	0%	2%	0%	2%	10%	18%	40%	6%	0%
Hadda phc	0%	2%	6%	10%	26%	22%	16%	16%	2%	0%
Nawaria phc	4%	8%	10%	12%	24%	20%	10%	8%	2%	0%
Shara'a 7 phc	12%	10%	18%	16%	14%	8%	10%	14%	0%	0%
Malawi phc	2%	0%	30%	8%	16%	38%	4%	2%	0%	2%

**Table 2:** Educational methods used for preventing coronavirus for men and women in the PHCs

PHCs	Television		Radio		Publication		Internet		Bilbord		Filed visiting		Exhibitions		Mobile		Lectures and seminar online	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Iskan phc	48%	48%	44%	40%	11%	4%	48%	50%	38%	16%	22%	6%	22%	4%	26%	46%	24%	2%
Muqrah phc	50%	50%	44%	46%	34%	44%	32%	42%	26%	30%	12%	30%	4%	24%	48%	48%	18%	36%
Hindawiyah phc	44%	50%	18%	30%	18%	14%	30%	18%	8%	4%	4%	8%	0%	2%	16%	24%	6%	0%
Maabdah phc	50%	44%	48%	18%	36%	6%	50%	44%	36%	4%	16%	0%	8%	0%	48%	42%	16%	0%
Jarwal phc	40%	38%	6%	12%	1%	4%	28%	18%	10%	12%	4%	2%	2%	2%	36%	22%	6%	16%
Hadda phc	24%	40%	10%	6%	4%	8%	42%	38%	4%	2%	4%	1%	0%	0%	18%	24%	2%	2%
Nawaria phc	32%	34%	0%	6%	0%	6%	22%	18%	4%	0%	4%	0%	2%	0%	20%	10%	4%	0%
Shara'a 7 phc	48%	50%	0%	0%	4%	4%	38%	38%	0%	0%	0%	6%	2%	0%	32%	32%	10%	14%
Malawi phc	50%	50%	50%	50%	40%	40%	50%	48%	44%	32%	32%	22%	28%	10%	50%	50%	0%	0%

In Al-Muqrah PHC the educational level for men was 0% primary, 4% intermediate, 22% with secondary school, 6% university and 18% postgraduate. Whereas the educational level for women was 0% primary, 16% intermediate, 22% high school, 4% universities and postgraduate studies 8%.

In Al-Hindawiyya PHC the educational level with a primary degree 0%, intermediate 12%, secondary 16%, and university 22%, and none of them hold postgraduate studies, and the educational levels of women were 0%, 16%, 16%, 16% and 4%, respectively

Both men and women of the Al-Maabdeh PHC at primary school level was 0%, intermediate 2 and 14%, secondary 22 and 20%, university 24 and 18% respectively. There were no men and women who hold postgraduate studies.

In Jarwal PHC male participants at elementary 0%, intermediate level 2%, high school 22%, university 18%, postgraduate 6%. Whereas no women were found with primary, intermediate degrees and postgraduate degrees but high school level participants were 10% and university 22%.

In Hadda PHC the men with elementary education was 0%, intermediate 6%, secondary 26%, university 16%, postgraduate 2%. Whereas 2%, women hold primary education, 0% intermediate, 22% secondary 16% University and there are none among them with postgraduate degree.

The percent people at different educational level of men in the Al Nawariah PHC patients was 2% with the primary education, 10% with intermediate level, 24% with the secondary level, 10% with the university, 2% with postgraduate level. While the percent women was 8%, 12%, 20%, 8%, and 0% respectively.

In Al Shara'a PHC the educational level of men was 12% for elementary, 18% for intermediate, 14% for secondary, 10% for university and 0% for postgraduate. Whereas women with 10% primary, 8% secondary, 16% intermediate, 14% university, and none of them hold postgraduate studies.

Among men in the Malawian health center 0% with primary education, 30% with intermediate, 16% secondary, 4%, university and none of them hold a postgraduate degree. Whereas women of 0%

primary, 8% intermediate, secondary 38%, undergraduate and postgraduate 2%.

### **Educational Methods used**

The educational methods used for preventing coronal virus in the PHCs are different. The recorded educational methods were television, radio, publication, internet, billboard, field visit, exhibition, mobile, lecture and online seminar. Among them television was the most used methods in all PHCs followed by internet, mobile and radio. Publication, exhibition and lectures were the least usable media among them. In Iskan PHC most of the personnel used television (48% male and 48% female) followed by internet (male 48% and female 50%) and radio (male 44% and female 40%). The personnel used publication as a least media for education in Iskan PHC. Whereas in Malawi PHC the staff used publication as a best media (both male and female 40%) followed by Muqrah PHC (Male 34% and female 44%).

The study can reduce the fear of personnel being infected with COVID-19 because health education helps individuals to improve their knowledge and attitudes towards a disease. It is observed that different age group participate into the study learned differently. The educational level might have significant impact on learning or receiving health education.

### **Conclusion**

The health education provided awareness and knowledge on covid-19 in the holy city of Saudi Arabia. Health education contributes to knowledge and behaviors toward Covid-19. Health education needs to pay particular attention to other cities of Saudi Arabia with great emphasis.

### **Recommendation**

There is need an intersectoral or department coordination for combating this devastating pandemic. The policy maker should follow the opinion and guidelines from the expertise. The awareness program and educational program should be propagated to the communities through available media.

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