Evaluation of Effective Factors on the Knowledge, Attitude, and Practice (KAP) about COVID-19 in Patients with Chronic Diseases Referred to Teaching Hospitals in Iraq and Iran

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Abstract

Background: The first step in the success of disease prevention and control programs is to raise the level of knowledge, attitude, and practice (KAP) of the people in this regard. This study aimed to investigate the factors affecting the KAP about COVID-19 in patients with chronic diseases referred to clinics affiliated with teaching hospitals in Iran and Iraq.

Materials and Methods: This cross-sectional study was performed on 1000 patients (Iraqi patients=500) over 18 years of age with chronic diseases referred to Baghdad Medical City (مدينة الطب) in Baghdad (Iraq), and Imam Reza and Ghaem Hospitals in Mashhad (Iran), in 2021. The available sampling was performed, and the standard Akalu knowledge, attitude, and practice questionnaire was used for data collection. Data were analyzed using SPSS software (version 16.0).

Results: The mean scores of KAP in both groups were unfavorable, but the level of performance in Iranian patients was better than in Iraqi patients (p <0.05). The results of a two-way ANOVA test showed no significant relationship between KAP scores of Iranian and Iraqi patients and baseline and intervening variables (e.g., gender, marital status, education, income) (p> 0.05). The Pearson correlation coefficient test showed a significant inverse correlation between patients' age and their knowledge and practice scores regarding COVID-19 (p <0.05).

Conclusion: There was an inverse correlation between patients' age and their knowledge and practice about COVID-19 so that with increasing the age of patients, their knowledge and practice scores about COVID-19 decreased significantly. There was no significant relationship between baseline and intervening variables and patients' knowledge, attitude, and practice scores.

Key Words: Attitude, Effective factors, Knowledge, Practice, Iran, Iraq.

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1- INTRODUCTION

COVID-19 varies greatly in severity, from mild respiratory syndrome to severe complications such as acute respiratory distress syndrome, septic shock, metabolic disorders, hemostasis, and death (1). Common chronic diseases, such as cardiovascular diseases, cancer, diabetes, and chronic respiratory and kidney diseases are responsible for seven out of every ten deaths in the world (2). The results of a systematic study show that people with high blood pressure, diabetes, cardiovascular diseases, and respiratory system diseases are the most vulnerable to COVID-19 (1). Studies in Iraq show an increase in the prevalence of chronic diseases such as diabetes, stroke, and hypertension (3).

A study in China showed that those with heart diseases, diabetes, high blood pressure, and respiratory diseases are at a greater risk of contracting COVID-19 (4). Akalu et al. (2020) reported that 33.9 and 47.3% of people with chronic diseases have poor knowledge and performance regarding COVID-19 (5). The highly contagious nature of COVID-19 makes it extremely dangerous and is associated with high mortality. The disease spread rapidly from China to more than 210 countries and led to an unprecedented pandemic (6). Studies show that preventive measures are crucial in controlling the COVID-19 infection (7).

The poor understanding and recognition of the disease, especially among high-risk groups, is a primary reason for the prevalence of the disease and the resulting casualties (7, 8). Success in controlling and minimizing the complications and deaths caused by COVID-19 requires a change in behavior, which is influenced by the knowledge and perception of the public, especially in high-risk groups (8). People with chronic diseases are among the high-risk groups for COVID-19 (9). Examining and recognizing the Knowledge, Attitude, and Practice (KAP) of patients with chronic diseases help identify preventive behaviors against COVID-19 (5). Studies have shown that the risk of severe disease and the possibility of death from COVID-19 are higher in people with non-communicable diseases (e.g., diabetes, cardiovascular diseases, cancers, and chronic lung diseases) than in the normal population (5, 10). The commitment of people to preventative measures is necessary to achieve the ultimate success against COVID-19 (11). According to the KAP theory, this issue is generally influenced by people's knowledge, attitude, and performance (KAP) regarding COVID-19 (12). The study of Erfani et al. (2020) on 8591 participants in Iran showed that 60% of the population had average knowledge of the disease, and 90% of the research subjects had a positive attitude toward disease prevention (10).

Success in controlling and reducing the mortality of COVID-19 requires changing the behavior of people, especially high-risk groups, and it depends primarily on people's knowledge and understanding. Considering the high risk of COVID-19 in patients with chronic diseases, the role of KAP in preventive behaviors, and the conflicting results in studies, the present study aimed to investigate the factors affecting the KAP of patients with chronic diseases regarding COVID-19 referred to clinics affiliated with teaching hospitals in Iran and Iraq.

2- MATERIALS AND METHODS

2-1. Study Design and Population

This cross-sectional analytical study was performed on 1000 patients with chronic diseases referred to three hospitals in the Baghdad Medical City (مدينة الطب) (Baghdad, Iraq, n=500), and Imam Reza and Ghaem teaching hospitals (Mashhad, Iran, n=500) in 2021. The research assistants in Iran were selected from undergraduate nursing students, and those

in Iraq were selected from the Chronic Diseases Clinic of Medina Hospital. The assistants received a one-hour explanation about the objectives of the study by the researcher. Assistant researchers attended the clinics in the evening shifts, which were dedicated to the chronically ill patients every day of the week, and carried out the available sampling.

2-2. Method

In this study, the available non-random sampling method was used. For the parameters of mean and standard deviation of knowledge, attitude, and practice scores of patients with COVID-19, the findings of the pilot study were used in the following sample volume formula. In this way, first, the scores of knowledge, attitude, and practice of 40 patients (20 Iranian patients and 20 Iraqi patients) were obtained and then, the mean and standard deviation (SD) of the two communities were used for the sample size formula:

$$N = [(Z_{(1-\alpha/2)} + Z_{(1-\beta)})^2 \times (s_1^2 + s_2^2)] / (m_1 - m_2)^2$$

$Z_{(1-\alpha/2)} = 1.96$ (Critical value for 95% confidence interval for two-domain study).

$Z_{(1-\beta)} = 1.28$ (Critical value for test power 80%).

S_1 = Awareness score in Iranian patients .

S_2 = Awareness score in Iraqi patients.

m_1 = Mean knowledge score in Iranian patients.

m_2 = Mean knowledge score in Iraqi patients.

$n = 1000$

After the necessary explanations, written consent was obtained from the people who were referred to the outpatient clinic and a questionnaire was given to them by research units to answer within 20-30 minutes. The procedure was done in the presence of the researcher and questions and possible problems were answered. After completing the questionnaire, an educational pamphlet about COVID-19 was given to the research units.

2-3. Measuring tools

2-3-1. Baseline characteristics

Demographic information questionnaire includes questions on nationality, age, gender, level of education, marital status, employment status, income level, place of residence, type of chronic disease, history of COVID-19, source of health care information, access to health and care equipment, and name of the hospital. These questions were designed based on previous studies and in consultation with nursing professors

2-3-2. KAP Questionnaire of individuals about COVID-19

The questionnaire consisted of 45 questions that assessed three areas of knowledge, attitude, and practice of individuals in relation to COVID-19 (5).

▪ **Knowledge assessment**: Questions 1 to 16 were related to the individuals' knowledge. The answers in this section were "correct (1 point)", "wrong (0 points)", and "I don't know (0 points)". The total knowledge score was from 0 to 16. A score between 12.16-16 points indicated good knowledge, a score between 9.6-12.6 points indicated average knowledge, and a score less than 9.6 points indicated poor knowledge.

▪ **Attitude Assessment**: Participants' attitudes toward COVID-19 were assessed with 14 questions. Responses were assessed as high (score 4), medium, low, and very low (score 1) using the Likert scale. The total score was between 14 and 56. A higher score indicated a better attitude towards COVID-19.

▪ **Performance measurement**: Performance was evaluated with 15 questions. The answers were "yes" and "no". The correct answer was assigned one score and the incorrect answer had a 0 score. The total score was between 0 and 15. A score between 12-15 points indicated good performance, a score between 9–11.9 points indicated moderate performance, and a score below 9 points indicated poor performance.

In the present study, content validity was used to determine the scientific validity of the instrument, so that after reviewing the opinions of seven faculty members of the School of Nursing and Midwifery and adapting this instrument to the objectives of the present study, the necessary corrections were applied and used in the research. Akalu et al. (2020) used the internal consistency method to determine the reliability of this tool and reported the Cronbach's alpha coefficient for the three areas of knowledge, attitude, and practice as 0.79, 0.79, and 0.85, respectively (5). In the present study, to calculate the Cronbach's alpha coefficient, the instrument was used by 40 patients (20 in Iran, and 20 in Iraq), and for the three areas KAP was 0.78, 0.81, and 0.78, respectively. It should be noted that the questionnaire used in this study (5) was first translated from English to Persian by a language expert. An English language expert in Iraq was then asked to translate the questionnaire into Arabic. At the same time, an Arabic language expert was asked to translate the Persian version of the questionnaire into Arabic. In the final stage, the translations were matched and approved by the nursing and English professors.

2-4. Ethical consideration

The Institutional Review Board (IRB) at the University of Mashhad, college of nursing, approved the study to be conducted. The study protocol met both the global and the committee publication ethics (COPE) standards of respecting human subjects' rights. After obtaining informed consent, the purpose of the research was explained to eligible participants. The researchers assured participants that their data were kept private and safe during and after research. The code of ethics for this research was obtained from the ethical committee of the College of Nursing at Mashhad University.

2-5. Data analysis

Descriptive statistics consisting of mean indices, standard deviation, and frequency distribution (frequency and frequency percentage) were used separately for the two groups of Iranian and Iraqi patients to express the characteristics of the research sample and evaluate and summarize the data. In the analytical statistics part, quantitative variables of normal distribution were determined first by Kolmogorov-Smirnov, and Shapiro-Wilk tests. The homogeneity of the two groups in intervening and contextual variables was examined using the Chi-square and Fisher's exact (qualitative variables), independent t-test (quantitative variables with natural distribution), and Mann-Whitney (non-rated quantitative variables) test. Either the independent t-test or Mann-Whitney test (depending on normality) was used for intergroup comparison. A two-way ANOVA was used to determine the effect of intervening and contextual variables on the dependent variables (i.e., the scores of knowledge, attitude, and practice regarding COVID-19 in patients). The Pearson correlation coefficient was used to determine the correlation between patients' age and knowledge scores about COVID-19. Data analysis was performed with the SPSS software version 16.0, and a p-value less than 0.05 was considered statistically significant.

3- RESULTS

A total of 1000 patients with chronic diseases (500 Iranian patients and 500 Iraqi patients) participated in this study. The average age of Iraqi patients was $53.73 + 10.66$ and Iranian patients $54.31 + 11.24$ years (p=0.41). Of Iraqi patients, 42.4%, and of Iranian patients, 41% were male (p=0.20). Also, 36.2% of Iraqi patients and 35.2% of Iranian patients had a diploma degree (p=0.08). Regarding the history of COVID-19 infection, 80.4% of Iraqi patients and 67% of Iranian

patients had no history of COVID-19 (p=0.001). The mean scores of patients' KAP regarding COVID-19 are shown in **Table 1**. In the majority of patients, the scores of KAP were lower than average. The results of the two-way ANOVA showed no statistically significant relationship between baseline and intervening variables and the KAP scores of patients with chronic diseases referred to clinics affiliated with teaching hospitals in Iran and Iraq (p>0.05). Therefore, none of the baseline and intervening variables had a confounding role in the present study (**Tables 2-4**).

Table-1: Mean of knowledge, attitude and practice scores towards Covid-19 among patients with chronic diseases who referred to teaching hospitals in Iran and Iraq (n=1000).

Knowledge score	Number	Mean+ SD	P-value*
Iranian patients	500	7.40+1.54	T=0.41
Iraqi patients	500	7.03+1.79	P=0.63
Attitude score	Number	Mean+ SD	P-value*
Iranian patients	500	27.30+ 3.58	T=1.12
Iraqi patients	500	26.62+6.72	P=0.36
Practice score	Number	Mean+ SD	P-value*
Iranian patients	500	4.31+1.03	Z=2.89
Iraqi patients	500	3.67+1.32	P=0.03

Independent t-test, SD: Standard deviation.

Table-2: The relationship between baseline and intervening variables with knowledge score in patients with chronic diseases referring to clinics affiliated to teaching hospitals in Iran and Iraq (n=1000).

Variables	General Effect	Group Effect	Variable Effect	Interaction Effect
Gender	0.001	0.001	0.64	0.19
Age, year	0.001	0.001	0.40	0.62
Marital status	0.001	0.001	0.34	0.74
Educational level	0.001	0.001	0.25	0.62
Job status	0.001	0.001	0.56	0.84
Income status	0.001	0.001	0.21	0.84
Type of chronic disease	0.001	0.001	0.36	0.73
History of covid-19	0.001	0.001	0.17	0.53
Sources of information	0.001	0.001	0.63	0.29

Table-3: The relationship between baseline and intervening variables with attitude score in patients with chronic diseases referring to clinics affiliated to teaching hospitals in Iran and Iraq (n=1000).

Variables	General Effect	Group Effect	Variable Effect	Interaction Effect
Gender	0.001	0.001	0.38	0.49
Age, year	0.001	0.001	0.80	0.77
Marital status	0.001	0.001	0.15	0.58
Educational level	0.001	0.001	0.43	0.29
Job status	0.001	0.001	0.16	0.54
Income status	0.001	0.001	0.71	0.14
Type of chronic disease	0.001	0.001	0.16	0.07
History of covid-19	0.001	0.001	0.50	0.42
Sources of information	0.001	0.001	0.64	0.19

Table-4: The relationship between baseline and intervening variables with practice score in patients with chronic diseases referring to clinics affiliated to teaching hospitals in Iran and Iraq (n=1000).

Variables	General Effect	Group Effect	Variable Effect	Interaction Effect
Gender	0.001	0.001	0.73	0.38
Age, year	0.001	0.001	0.24	0.34
Marital status	0.001	0.001	0.32	0.09
Educational level	0.001	0.001	0.89	0.43
Job status	0.001	0.001	0.38	0.49
Income status	0.001	0.001	0.86	0.71
Type of chronic disease	0.001	0.001	0.16	0.58
History of covid-19	0.001	0.001	0.72	0.14
Sources of information	0.001	0.001	0.41	0.74

The Pearson correlation coefficient test showed an inverse and significant correlation between the age of the patients and the knowledge score regarding COVID-19 ($p<0.001$, r = 0.46). As the age of the patients increased, their knowledge score regarding COVID-19 decreased significantly ($p<0.001$) (**Figure 1**). The Pearson test also showed no significant correlation between the age of the patients and the attitude score regarding COVID-19 (p=0.28, r=0.05) (**Figure 2**). However, it indicated an inverse and significant correlation between the age of patients and the performance score regarding COVID-19 ($p<0.001$, r = 0.29). As the age of the patients increased, their performance scores regarding COVID-19 decreased significantly (**Figure 3**).
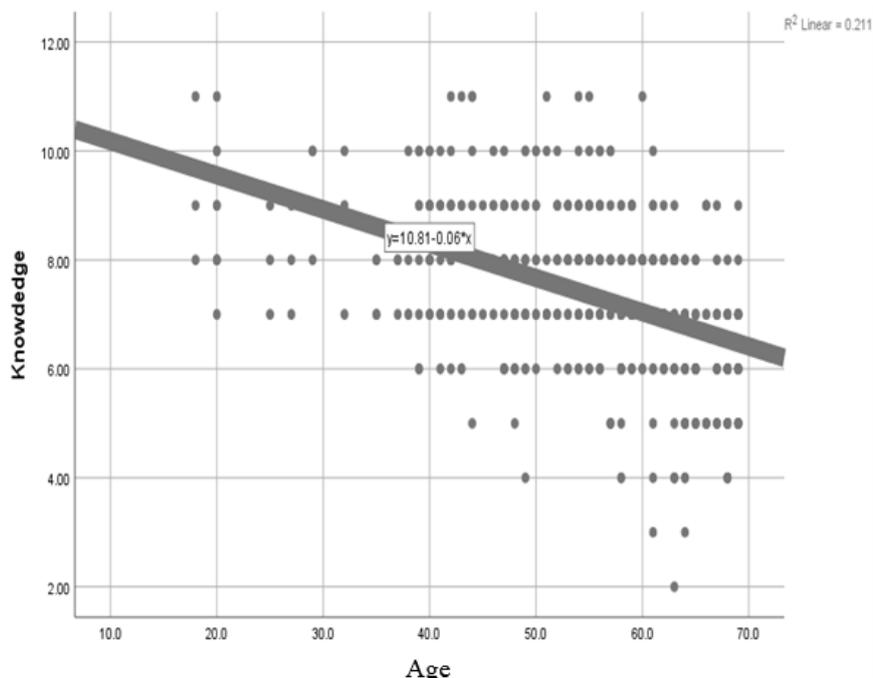

Fig.1: Correlation between the age of patients and the knowledge score regarding COVID-19.
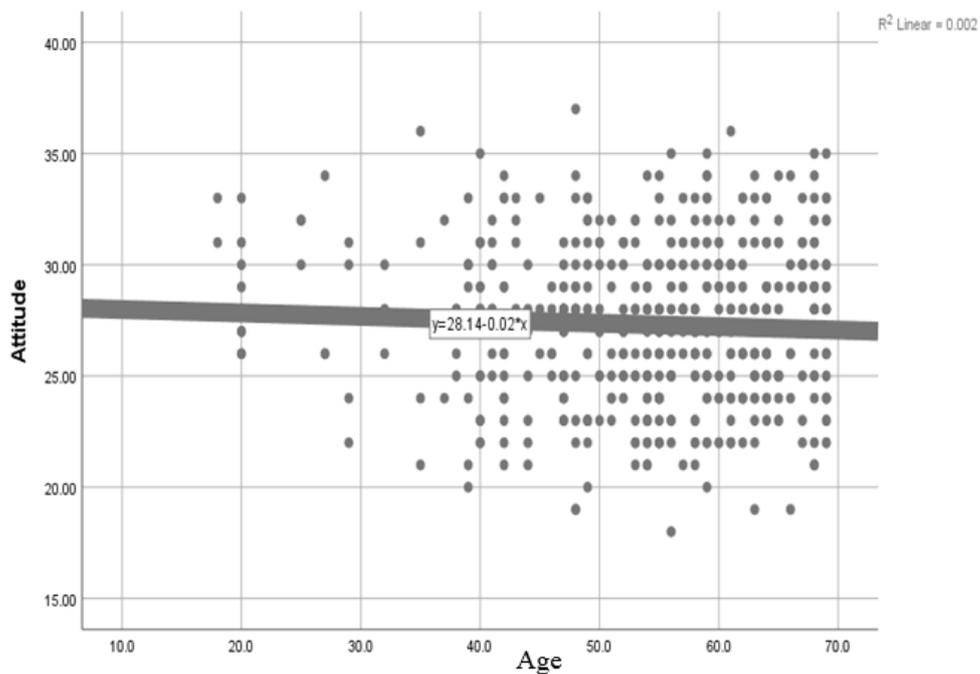
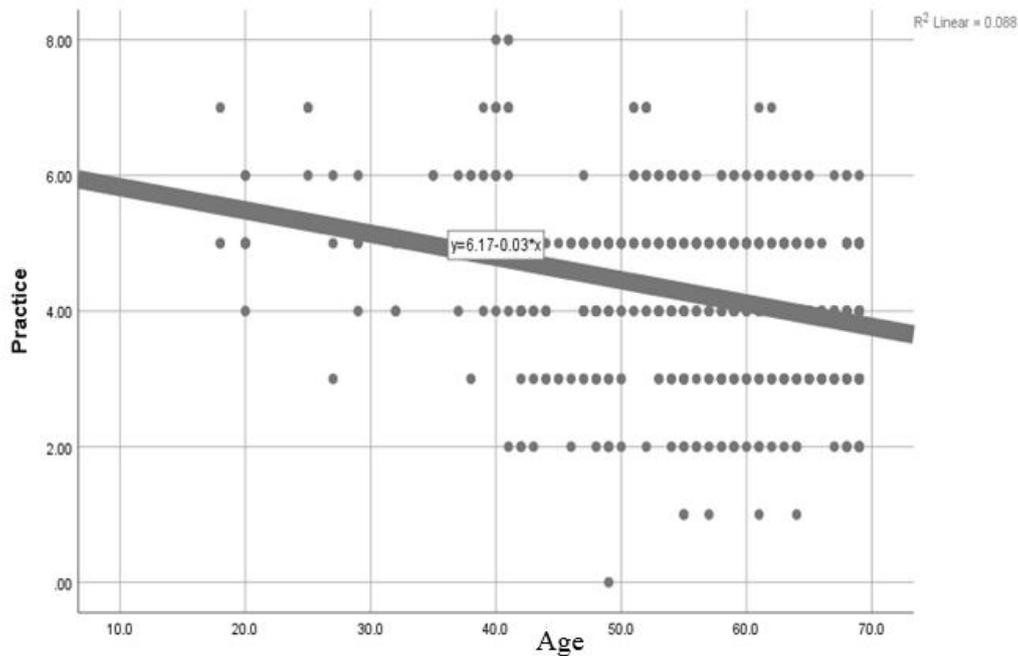**Fig.2**: Correlation between the age of patients and the attitude score regarding Covid-19 (n=1000).

Fig.3: Correlation between the age of patients and the practice score regarding Covid-19 (n=1000).

4- DISCUSSION

This study investigated the factors affecting the KAP regarding COVID-19 in chronic disease patients referred to clinics affiliated with teaching hospitals in Iran and Iraq. During the COVID-19 pandemic in the past two years, no studies were found on the background variables and their relationship with KAP. The results of the present study showed no significant statistical relationship between the baseline and intervening variables (e.g., gender, income, education, and occupation) and the KAP scores of the patients.

However, there was an inverse and significant correlation between the age of the patients and the scores of knowledge and performance. There was no significant correlation between the age and attitude score, meaning that the attitude score remained almost constant with age. These results appear logical and reasonable as older people usually have a decreased access to information and a lower extent of knowledge. This is due to the rapid changes in life trends, so it is more difficult for people to adapt and keep up with these changes as they get older.

For example, many older people do not have the skill to work with smartphones, although it is taken for granted and almost trivial for younger people. Performance is likely to decrease with age, and although this can be delayed, it is usually inevitable. The constancy of the attitude score of the research units regarding COVID-19 can be attributed to the concept of attitude being rooted in people's thoughts and beliefs and probably not related to the current knowledge and performance of people. As the value and belief systems of people are usually stable and little changed, it is expected that the attitude is the least changed among the KAP variables. A review of the relevant studies shows conflicting results regarding the KAP of COVID-19 in patients with chronic diseases. In some studies, the KAP level is generally low, and in others, it is high in knowledge but poor in performance and preventive behaviors. Some studies have the problem of generalizability, and no study has compared two groups of chronic patients in two communities (5, 13-20). It is noteworthy that all three variables of knowledge, attitude, and practice in the current study were lower than the average. This can pose challenges to the success of the control and management programs of COVID-19 in both countries. It should also be noted that in this study, KAP was investigated in patients with chronic diseases. Before beginning, the research team assumed that people with chronic diseases were among the high-risk groups for contracting COVID-19. Therefore, it is reasonable that they should take better precautions, and their KAP level should be higher than the average. However, the findings of the study showed that the KAP scores were not desirable in both Iranian and Iraqi societies.

5- CONCLUSION

The average score of KAP in Iraqi and Iranian patients was unfavorable, but the level of performance in Iranian patients was better than in Iraqi patients. There was no statistically significant relationship between the KAP scores of Iranian and Iraqi patients and baseline and intervening variables. There was an inverse and significant correlation between the age of the patients and the level of knowledge and practice of the patients regarding COVID-19, so older patients had significantly lower scores in knowledge and practice regarding COVID-19. The findings indicate that behavioral change programs are required as the effectiveness of health education programs depends on the level of KAP.

6- ACKNOWLEDGMENTS

7- CONFLICT OF INTEREST: None.

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