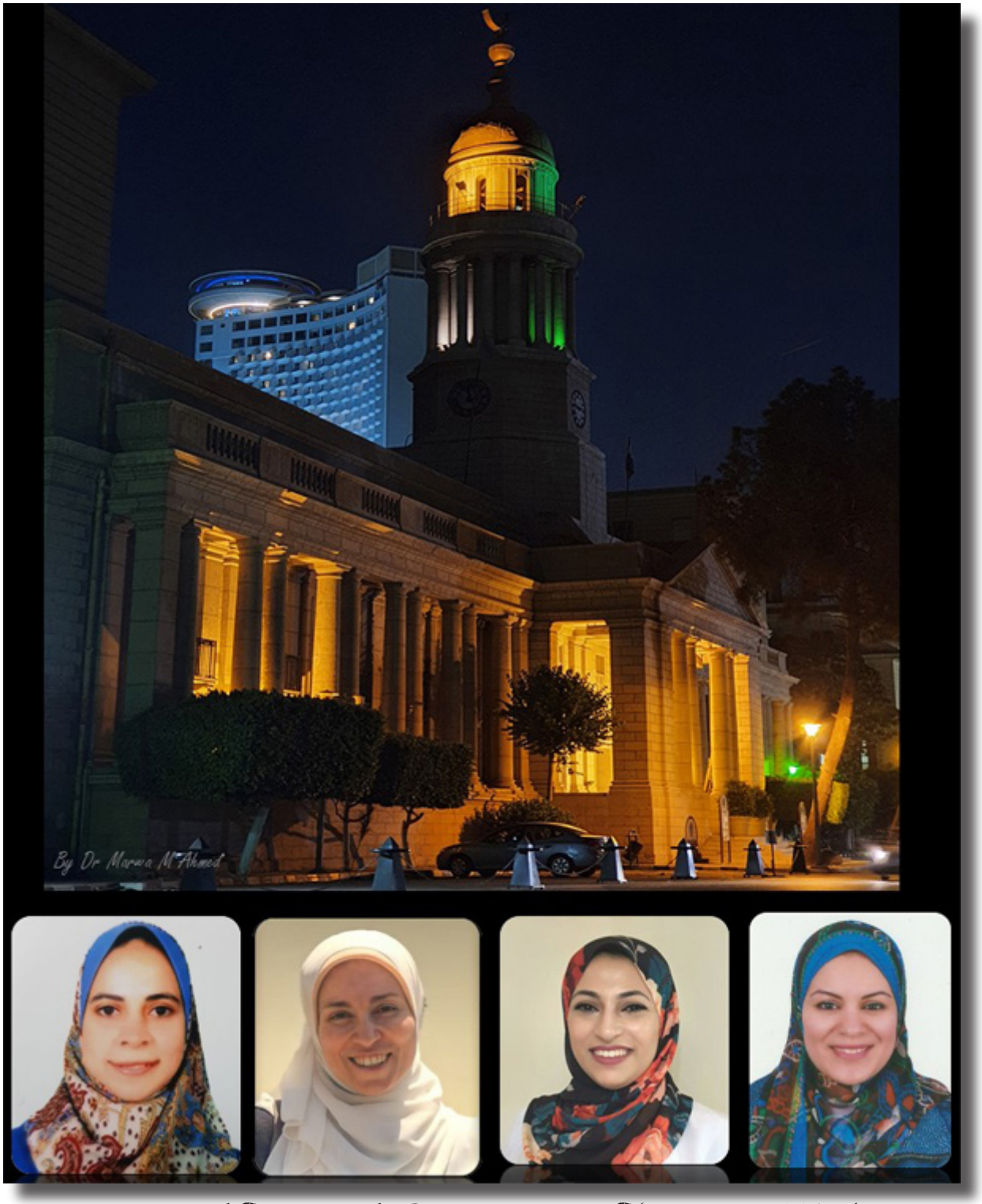
World Family Medicine Journal
incorporating the Middle East Journal of Family Medicine

ISSN 1839-0188

September 2021 - Volume 19, Issue 9



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Editorial

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This is the ninth issue this year that has a variable topic from the region, including topics on hip fracture, hypothyroidism, breast feeding, contraception, heart problems, obesity, and Covid 19.

Dr Sabana stressed that Hypothyroidism is a common condition which is often managed in primary care. There is considerable prevalence information on the condition in Europe and USA, however little is known about the prevalence in the Middle East, particularly in Qatar. The purpose of the study was to establish the burden of the disease in the primary care population in Qatar. He did observational study using electronic health data from primary care records of all adults registered with Primary Health Care Corporation (PHCC). Patients were identified as having hypothyroidism by using selected Snomed CT codes. The prevalence of hypothyroidism was estimated at approximately 4.74% The majority of hypothyroid patients (57.23%) were found to suffer with additional comorbidities. Given the ease of access to private health care, and those patients choosing to have health care outside the country, this may be an underrepresentation of the true prevalence.

Dr Mohsen did a retrospective study of patients presenting with intertrochanteric fracture to the Department of Orthopaedic Surgery at Algamhoria Teaching Hospital and at two private hospital in Aden, Yemen, during the period January 2018–December 2019 to evaluate the clinical outcomes of intertrochanteric fractures that were treated with Dynamic Hip Screw in Aden. Out of 48 patients, 29 patients were females (60.4%) and 19 patients (39.6%) were males and the mean age was 75.1±7.4 years. The mean age of male patients was 76.4 ± 6.9 years while for females was 74.2±7.7 years. The causes of injuries were significantly different among the age groups of patients (P < 0.05). We found (58.3%) of intertrochanteric fractures were in the right side and (41.7%) were in the left side. The authors concluded that the dynamic hip screw is a modality of choice in patients with intertrochanteric fracture; it is effective, simple, and safe. Further studies are needed to compare between our modality and other modalities.

Al nashar et al., did a cross-section study to find the level of awareness in mothers about the relative and absolute contradiction of breastfeeding among Taif city The assessment of knowledge level related to breastfeeding showed that only 7.9% had good knowledge, and most of the participants had poor knowledge (82.1%)When we assessed the relationship of this knowledge level with the age of the mothers, it was found that mothers who were 18-28 years of age had comparatively more 'good' knowledge (20.0%) than other age groups. The authors concluded that the level of awareness in terms of contraindications of breastfeeding in our study was very low, so we need to increase awareness by Healthcare professionals as they have a critical role in spreading information and encouraging women to breastfeed. The health education program should be implemented as soon as possible.

Alsaleh et al., stressed that emergency contraception (EC) plays a vital role in preventing unintended pregnancy up to 98% by delaying ovulation or preventing implantation. It is available over the counter in most Arab world.In our study,the investigating group wanted to explore knowledge attitude and practice among women of Saudi Arabia toward EC . To achieve this objective,a validated survey was used as study tool. It was found that there is improved knowledge ,attitude and practice among women towards EC utilisation.

El-Gamal, et al., did a cross-sectional study of 378 subjects to explore the pattern of KAP towards HRIs among the subjects in Jeddah city. 18.2% of the subjects suffered from HRIs, and 49% never received health education about HRIs. Increased KAP score was associated with increased age (b= 0.177, p<0.000), more encountered in the females (b= -2.25, p <0.000), in those who owned air conditioning (b = 5.3, p < 0.024), in the smokers (b= 1.77, p<0.35), and in those who received health education about HRIs (b=2.327, p< 0.000). the authors concluded that subjects' awareness of the prevention of HRIs needs to be strengthened.

Alabdali, et al., did a retrospective study was done on 529 patients aged 30 to >75 years of both gender who had CAD to assess the different types of arrhythmias in patients with ischemic heart diseases in Taif city. All patients had a type of arrhythmia during their hospital stay. The main types of arrhythmias were AF (26.8 %), conduction disturbance (38.2%) and first-degree heart block (9.1 %). Patients who had STEMI with symptoms of heart failure and arrhythmias had a significant higher percentage for the need of DC shock compared to other patients. Patient with UA develop low EF showed to have significant as regard arrhythmias rather than normal EF. while the number of affected vessels had no effect on the development of arrhythmias during acute stage. The development of arrhythmia that required DC shock is more common in STEMI patients especially who developed heart failure symptoms. The authors concluded that the
need of assessment of heart failure symptoms and EF in patients with UA is essential to expect the need for implantable device insertion. Also, early administration of b-blocker decreases the risk of development of arrhythmia during acute ischemic event.

Bham & Ditta reviewed the use of Semaglutide for the treatment of obesity. The use of existing medicinal strategies such as sibutramine and orlistat have not been very successful due to their own limitations. Semaglutide is a glucagon-like peptide-1 analogue that has been utilized in type 2 diabetes mellitus treatment. Its use in weight management has been recently explored in several studies. A review of literature can provide insight into whether semaglutide is a potential avenue for long term and sustainable weight loss. All studies reviewed identified that study participants on semaglutide experienced a significantly higher overall weight loss than placebo and most other comparison treatments. There were gastrointestinal adverse events recorded in most studies, but these did not seem to have an impact on the overall weight loss. Semaglutide provides a promising avenue for weight loss in obese and overweight individuals, although further research on management avenues for the GI events may ensure long term and sustained use.

Two papers discussed Covid issues in the region Alharthi, did an An explanatory mixed method study was conducted among 45 participants (owners, managers and supervisors of super-markets and major shops) along with a qualitative technique Key Informant Interview that was done among 9 purposively selected managers and supervisors to further explore the factors influencing adherence to social distancing and PPE use in Bisha City, KSA. The aim was to determine the knowledge and understanding of the concepts of social distancing and personal protective equipment (PPE), and its adherence among the owners and managers of Supermarkets and Major shops, which could be the main places for community acquired infection in Bisha City, Kingdom of Saudi Arabia

education on COVID-19 have reached the people evenly and equally. Owners were less understanding than other cadres on social distancing and use of PPE. There was a significant correlation between participants' knowledge and their adherence level. The in-depth interviews revealed remarkable outcomes with several facilitating and hindering factors on social distancing and use of PPE. The authors concluded that the actions taken by the government to provide education regarding COVID-19 spread and prevention have reached the target population evenly and equally. However, there is chance for improvement to prevent the cross infection in the community work-place settings with stringent implementation of the norms of social distancing and scientific use of PPE.

While Ebrahim, et al., did an online based cross-sectional study done from April to May 2021 to explore the degree of anxiety and perceived stress in junior and mid senior physicians working at Cairo University Hospitals amid COVID 19 pandemic. Most of the participants were females (66.3%), single (66.8%), not previously infected with COVID-19 (63.5%) and not included in the care of COVID 19 patients (64.9%). The mean GAD total score was 8.99±5.58 with 57.7% of the participants suffered mild to moderate anxiety. The mean PSS score was 20.76±5.3 with 80.3% found to have moderate stress. Except for the relation between gender and perceived stress (p value= 0.003), and the relation between psychiatric illness and perceived stress (p value=0.026), there was no statistical significance between anxiety and perceived stress from one side and sociodemographic and clinical data from the other side. The authors concluded that anxiety & perceived stress among physicians during the COVID-19 pandemic is considered high regardless of the different sociodemographic and clinical characteristics.

Dr Abdulrazak Abyad

Incidence prevalence and management of different types of arrhythmia in patients with ischemic heart disease in Taif city

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Received: July 2021; Accepted: August 2021; Published: September 1, 2021.
Citation: Ali M. Alabdali et al. Incidence prevalence and management of different types of arrhythmia in patients with ischemic heart disease in Taif city. World Family Medicine. 2021; 19(9): 6-13 DOI: 10.5742/MEWFM.2021.94118

Abstract

Background: Despite considerable progress in management over the recent years, coronary artery disease (CAD) remains the leading cause of death.
Objectives: to assess the different types of arrhythmias in patients with ischemic heart diseases in Taif city.

Methods: A retrospective study was done on 529 patients from Taif, Saudi Arabia aged 30 to >75 years, of both genders and who had CAD, through the review of medical records of cardiac patients in AL Hada armed forces hospital. A checklist was used that included demographic features and risk factors for ischemic heart disease, symptoms of heart failure, medications that patients who had CAD used and types of arrhythmias.

Results: All patients had a type of arrhythmia during their hospital stay. The main types of arrhythmias were AF (26.8 %), conduction disturbance (38.2%) and first-degree heart block (9.1 %). Patients who had STEMI with symptoms of heart failure and arrhythmias had a significantly higher percentage for the need of DC shock compared to other patients. Patients with UA who developed low EF were shown to be significant as regards arrhythmias rather than normal EF. The number of affected vessels had no effect on the development of arrhythmias during the acute stage. The development of arrhythmia that required DC shock was more common in STEMI patients especially those who developed heart failure symptoms.

Conclusion: The need of assessment of heart failure symptoms and EF in patients with UA is essential to determine the need for implantable device insertion. Also, early administration of b-blocker decreases the risk of development of arrhythmia during an acute ischemic event.

Key words: arrhythmias, patients, ischemic, heart, disease, Taif

Introduction

Arrhythmias are an unwanted cardiac event that increases mortality and morbidity in patients with underlying heart illness as well as in healthy people (1,2). Despite recent advances in care, coronary artery disease (CAD) continues to be the major cause of death (3). The development of ventricular tachyarrhythmias during periods of myocardial ischemia or infarction is blamed for many of these deaths. Ionic and metabolic changes characterize myocardial ischemia, resulting in an unstable electrical substrate capable of causing and maintaining arrhythmias, while infarction causes electrical inactivity and prevents conduction (4). The use of device therapy to prevent sudden cardiac death, particularly in individuals with coronary artery disease, has a clear recommendation (5). It is believed that any type of arrhythmia counts as an independent major risk factor with severe LV systolic dysfunction (6,7).

In middle and low-income countries, cardiovascular disease (CVD) accounts for 80% of deaths; this is predicted to rise rapidly, particularly in the Arabian Gulf region's Kingdom of Saudi Arabia (KSA). CVD is also said to be the leading cause of death in Saudi Arabia (8). The single nationally representative study undertaken in Saudi Arabia found a crude prevalence of CVD of 5.5 percent among the Saudi population (9).

A study conducted in 2012 in Saudi Arabia to assess the incidence of ventricular arrhythmia (VA) and associated outcomes in patients with acute coronary syndrome found 5,055 (3.3%) were diagnosed with VA, (98.8%) occurred in-hospital, males were twice as likely to develop VA than females, and systolic blood pressure less than 90 mm Hg was positively associated with VA. The adverse in-hospital outcomes including re-myocardial infarction, cardiogenic shock, congestive heart failure, major bleeding, and stroke were higher for patients with VA (10).

In 2019 a study was done to assess risk factors, etiologies, comorbidities, and outcome of AF. The study found that AF was more prevalent among females in Saudi Arabia. HTN, valvular heart disease, and T2DM were the most prevalent risk factors of AF in Saudi Arabia. Valvular heart disease was more prevalent among older patients and significantly associated with CAD. HTN, CAD, and CKD were the most significant risk factors for HF in patients with AF (11).

In 2019, research was performed in KSA to evaluate the frequency, predictors, and short-term and long-term findings associated with in-hospital sustained ventricular tachycardia (VT) and ventricular fibrillation (VF) in patients with heart failure, collectively referred to as ventricular arrhythmias (VA). The study found that HF in-hospital VA incidence was 4.2%. Men were more likely to have VA, and their average age was younger than non-VA patients. Significant risk factors for VA were smoking and a family history of cardiomyopathy. Arrhythmia, ST-elevated myocardial infarction, infections, and hypotension all remained significant predictors of in-hospital VA, with three to seven times higher risk. When compared to those without VA, patients with VA had greater incidence of in-hospital events such as recurrent HF, haemodialysis, shock, sepsis, major bleeding, intra-aortic balloon pump, and stroke, all of which were very significant (12). The aim of our study was to assess the different types of arrhythmias in patients with ischemic heart diseases in Taif city, KSA.

Methodology

Study design: This is a Retrospective cohort study, conducted in Taif, Saudi Arabia, through review of medical records of cardiac patients in AL Hada armed forces hospital.

Study subjects: The study's population consisted of 30 to >75year old , male and female ischemic cardiac patients including all the patients in cardiology department except those who did not have complete information as well as patients younger than 30 years and those who are not ischemic cardiac patients.

Sample size: Estimated sample size was 529 patients. Systematic random technique was applied, Confidence level was 95%, margin of error 5%.

Method for data collection and instrument: A checklist was used to collect data from medical records. The checklist included demographic features such as age and gender, as well as risk factors for ischemic heart disease,

List of abbreviations

CAD	Coronary Artery Disease
LV	Left ventricle
KSA	Kingdom of Saudi Arabia
VA	Ventricular arrhythmia
AF	Atrial fibrillation
T2DM	Type 2 diabetes mellitus
HTN	Hypertension
CKD	Chronic Kidney disease
VT	Ventricular tachycardia
VF	Ventricular fibrillation
HF	Heart failure

symptoms of heart failure, medications that patients used, types of arrhythmia, and ischemic heart diseases.

Analysis and entry method: Data were analyzed using the (SPSS) statistical program version 25 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.). Qualitative data was expressed as numbers and percentages, and Chi- squared test ($\chi 2$) was applied to test the relationship between variables. A p-value of <0.05 was considered as statistically significant.

Results

In our study, we succeeded in collecting data of 529 patients with a response rate of 52.9 %. In Table 1, we showed the baseline characters of the patients where most of patients were males (76.2 %) while 50.5 % of patients were between 60-74 years old. Moreover, we found that 12.5 % of patients had more than three risk factors such as smoking, DM, hypertension or family history of ischemic cardiac conditions. Furthermore, 42.9 % of patients had a history of single vessel coronary artery disease, while 62.2 % of them indicated that they did not use B blocker before the current event. Moreover, 30.6 % of patients indicated having symptoms of heart failure, mainly shortness of breath (27.4%).

All patients in our study had a type of arrhythmia during their hospital stay where the main types of arrhythmia were AF (26.8 %), conduction disturbance (38.2%) and first degree Heart block (9.1 %). Moreover, 35.9 % of patients had previous arrhythmia prior to the event and 62.9 % of patients showed ECHO ejection fraction of more than 45. Moreover, 90.9 % of patients did not need an implantable device and almost 85 % of patients needed modification of their medications (Table 2).

Table 3 - patients who had STEMI with symptoms of heart failure and developed arrhythmias showed higher significant percentage for the need of DC shock compared to the others (p=0.001). On the other hand, patients who had UA with symptoms of heart failure and developed arrhythmias and low EF showed significant higher percentage for the need of an implantable device ($\chi 2$=8.6, p-value = 0.014)(Figure 1).

Table 4 shows a non-significant relationship between ACS (STEMI, NSTEMI, UA) with single or multiple vessel diseases and type of arrhythmias (p=> 0.05). This gives an indication of a non-significant effect of number of affected vessels on type of arrhythmia.

Figure 2 shows that patients who had NSTEMI and developed wide complex tachycardia were in needif ICD insertion rather than other complex tachycardia (p=0.045) Table 5 shows that patients who had UA and developed low EF had a significant relationship in development of arrhythmias rather than patients who had UA with normal EF (p=0.03).

Table 6 shows that early initiation of B-blocker in ACS patients showed a significant difference as regards development of arrhythmia when compared to patients without early initiation of B-blocker.

Table 1: Patients' characteristic baseline (N=529).

Variable	No. (%)
Age	
30-54	149 (28.2)
60-74	267 (50.5)
>74	113 (21.4)
Gender	
Male	403 (76.2)
Female	126 (23.8)
Tradition riskfactors (smoking, family history , D.M, HTN)	
2<	263 (49.7)
3	200 (37.8)
>3	66 (12.5)
History of coronary artery disease	
single Vessel disease	227 (42.9)
2 vessel disease	105 (19.8)
3 vessel disease	197 (37.2)
Presence of any symptoms of heart failure (shortness of breath, lower limb edema, admitted with pul. edema)	
Yes	162 (30.6)
No	367 (69.4)

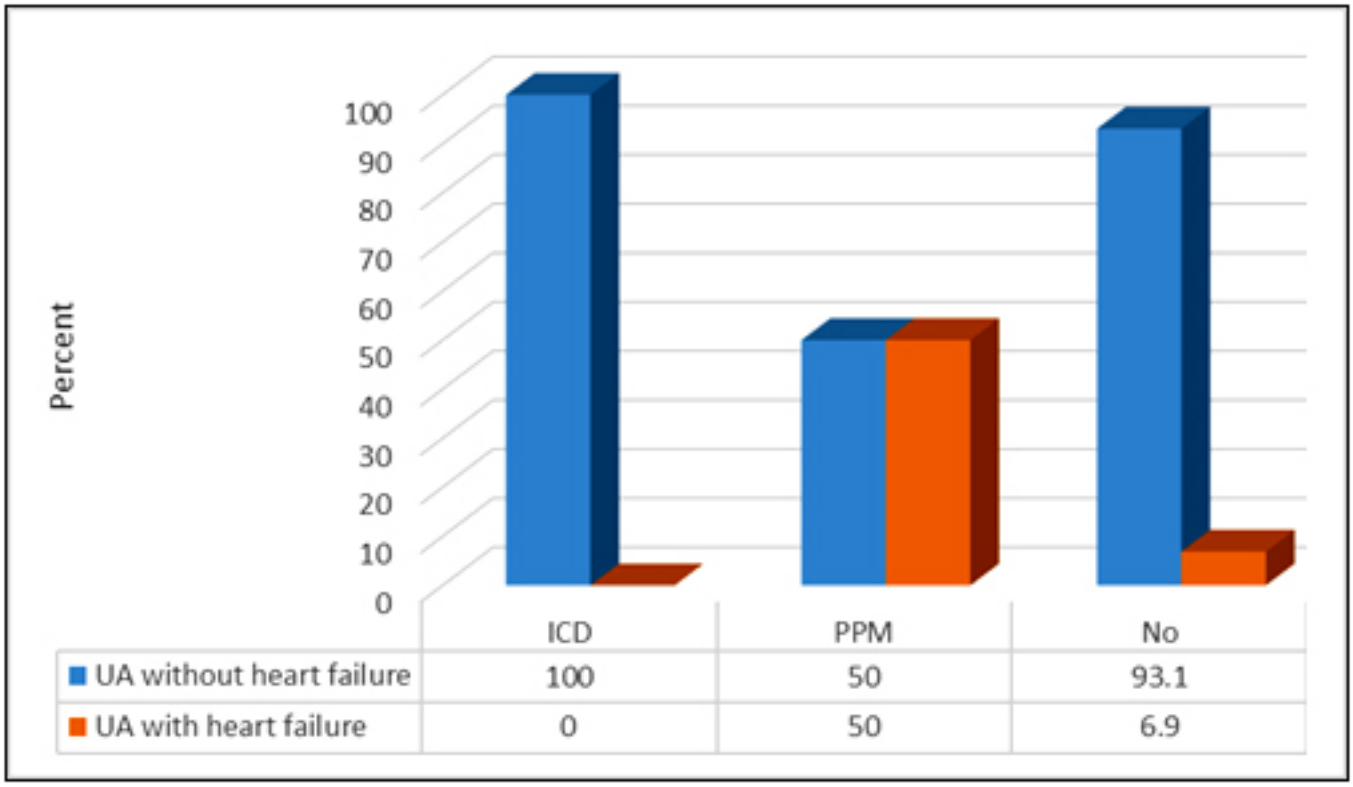
Table 2: Distribution of studied patients according to type of arrhythmia, presence of arrhythmia prior to event, ECHO parameters, need for coronary angiography, implantable device, arrhythmia requiring DC shock (no. 529).

	Variable	No. (%)
Arrhythmias	A. tachycardia	32 (6)
	complete heart block	4 (0.8)
	VT Rt side	3 (0.6)
	VT Lt side	10 (1.9)
	VF	15 (2.8)
	junctional escape	2 (0.4)
	AF	142 (26.8)
	Conduction disturbances	254 (48.1)
	First degree heart block	48 (9.1)
	Second degree heart block Mobitz I	1 (0.2)
	Second degree heart block Mobitz II	1 (0.2)
Presence of arrhythmia prior to event	Yes	190 (35.9)
	No	339 (64.1)
ejection fraction(EF)	<40	196(37.1)
	>40	333 (62.9)
Acute coronary syndrome	STEMI	165 (31.2)
	NSTEMI	287 (54.3)
	UA	77 (14.6)
implantable device	ICD	7 (1.3)
	PPM	41 (7.8)
	No	481 (90.9)
Arrhythmia requiring DC shock	Yes	18 (3.4)
	No	511 (96.6)

Table 3: Relationship between (STEMI) with and without heart failure and types of arrhythmias, DC shock, Implantable device and EF

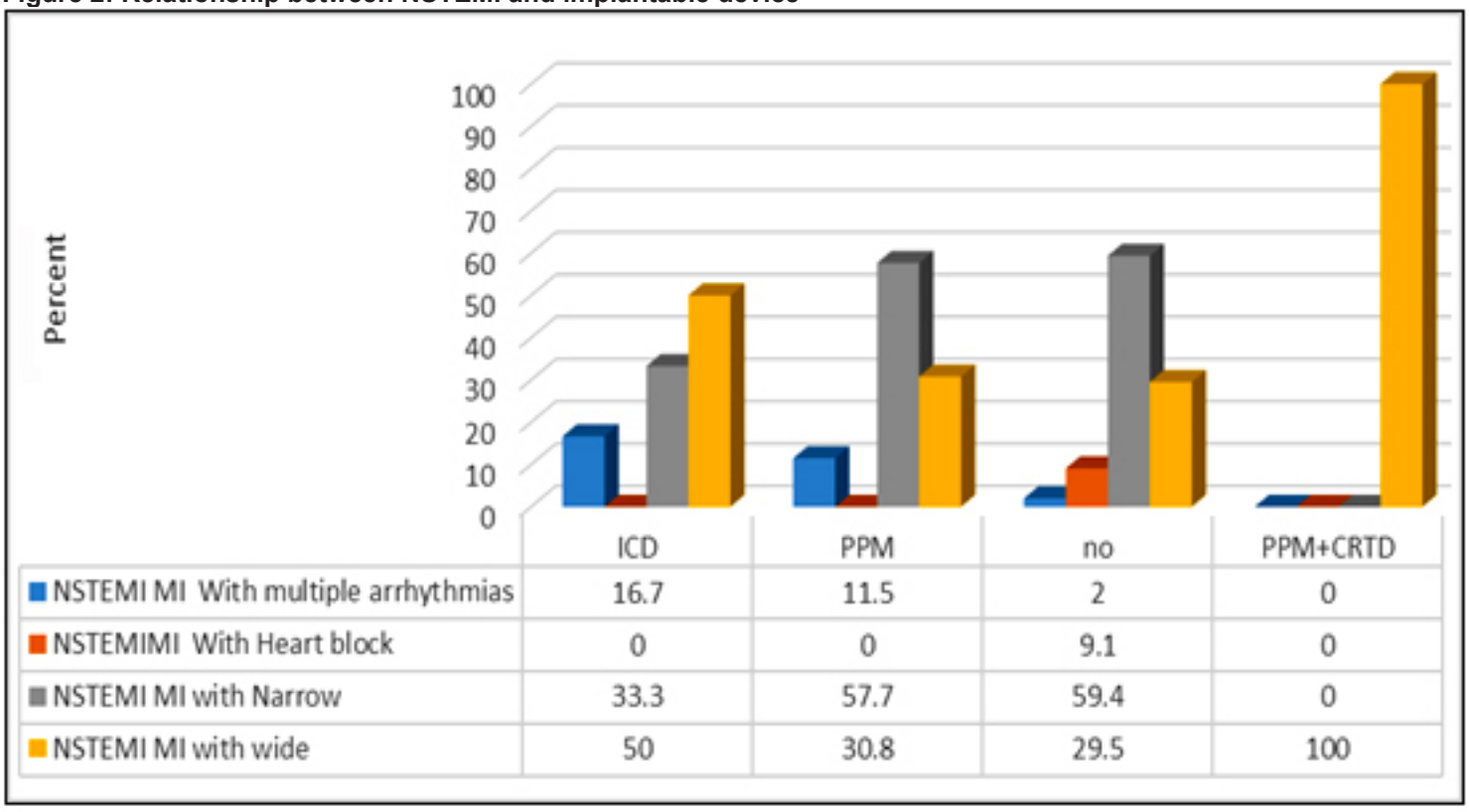
	Variable	STEMI		χ^2	p-value
		STEMI with heart failure (no.:12)	STEMI without heart failure (no. 153)		
Arrhythmias	Wide Complex (VT/VF / junction ectopic)	5 (9.6)	47 (90.4)	2.81	0.421
	Narrow complex (AF/AT)	4 (4.5)	84 (95.5)		
	Heart block	2 (10)	18 (90)		
Medication	Present	12 (8.4)	131 (91.6)	1.99	0.158
	Absent	0 (0.0)	22 (100)		
Arrhythmia requiring DC shock	Yes	4 (30.1)	9 (69.2)	11.55	0.001
	No	8 (5.3)	144 (94.7)		
Implantable device	PPM	0 (0.0)	10 (100)	0.83	0.361
	No	12 (7.7)	143 (92.3)		
	ICD	0(0.0)	(10)100		
EF	EF<40	9 (11.4)	70 (88.6)	3.81	0.051
	EF>40	3 (3.5)	83 (96.3)		

Figure 1: Relationship between UA with and without heart failure and implantable device



	ICD	PPM	No
UA without heart failure	100	50	93.1
UA with heart failure	0	50	6.9

Figure 2: Relationship between NSTEMI and implantable device



	ICD	PPM	no	PPM+CRTD
NSTEMI MI With multiple arrhythmias	16.7	11.5	2	0
NSTEMIMI With Heart block	0	0	9.1	0
NSTEMI MI with Narrow	33.3	57.7	59.4	0
NSTEMI MI with wide	50	30.8	29.5	100

Table 4: Relationship between ACS (STEMI,NSTEMI,UA) with single or multiple vessel diseases and type of arrhythmias

Variable	STEMI		χ2	p-value
	STEMI with single vessel (N0.:63)	STEMI with 2 or multiple vessels (NO.:101)		
Arrhythmias Wide Complex (VT/VF/ junction ectopic) Narrow complex (AF/AT) Heart block	17 (32.7) 34 (39.1) 10 (50)	35 (67.3) 53 (60.9) 10 (50)	1.87	0.599
	NSTEMI		χ2	p-value
	NSTEMI with single vessel	NSTEMI with 2 or multiple vessels		
Arrhythmias Wide Complex (VT/VF/ junction ectopic) Narrow complex (AF/AT) Heart block	34 (39.1) 77 (45.8) 7 (30.4)	53 (60.9) 91 (54.2) 16 (69.6)	4.62	0.202
	UA with single vessel (no.:42)	UA with 2 or multiple vessels (no.:35)		
Arrhythmias Wide Complex (VT/VF/ junction ectopic) Narrow complex (AF/AT) Heart block	13 (56.5) 21 (53.8) 8 (61.5)	10 (43.5) 18 (46.2) 5 (38.5)	2.7	0.44

Table 5: Relationship between UA and implantable device and EF

Variable	UA			χ2	p-value
	UA with wide	UA with Narrow	UA With Heart block		
Implantable device ICD PPM no	 0 (0.0) 2 (50) 21 (29.2)	 0 (0.0) 1 (25) 38 (52.8)	 1 (100) 1 (25) 11 (15.3)	6.44	0.376
EF EF<40 EF>40	 9 (47.4) 14 (24.1)	 4 (21.1) 35 (60.3)	 5 (26.5) 8 (13.8)	8.96	**0.03**

Table 6: Relationship between ACS (STEMI,NSTEMI,UA) with medication and type of arrhythmias

Variable	STEMI		χ^2	p-value
	Early B.B initiation	Late B.B initiation		
Arrhythmias				
Wide Complex (VT/VF/ junction ectopic)	45 (31.5)	6 (27.3)	13.61	0.003
Narrow complex (AF/AT)	82 (57.3)	7 (31.8)		
Heart block	13 (9.1)	7(31.8)		
	NSTEMI & UA		χ^2	p-value
	Early B.B initiation	Late B.B initiation		
Arrhythmias				
Wide Complex (VT/VF/ junction ectopic)	18(32.7)	5(22.7)	9.14	0.027
Narrow complex (AF/AT)	31(56.4)	8(36.4)		
Heart block	5(9.1)	8(36.4)		

Discussion

Arrhythmia is very common in IHD, with high morbidity and mortality. Development of arrhythmias (VAs) in the setting of an acute myocardial infarction (MI) is one of the most common causes of death. However, advancements in arrhythmia detection and treatment have a significant positive impact on the outcome of arrhythmias associated with acute MI, resulting in a better patient prognosis (13). In our study, we aimed to assess the different types of arrhythmias in patients with ischemic heart diseases in Taif city, KSA. This topic is under discussion in the literature review. In our study, the main types of arrhythmia were AF (26.8 %), conduction disturbance (38.2%) and first degree Heart block (9.1 %). Patients with ischemic heart disease were found to have the most VT/VF and AF arrhythmias in another study (14). Atrial fibrillation (AF) is one of the most common arrhythmias, according to Wang TJ (15) and Yong F. (16) who both published similar findings. AF is normal in DCM, and it reduces cardiovascular ability, lowers quality of life, and has been linked to a deteriorating outcome in patients with CHF of various etiologies, including ischemic and non-ischemic CHF (17). Furthermore, the prevalence of patients with STEMI was only 29%, which is significantly lower than M Alassouli's study, which found a prevalence of 70.9 percent (18). Our study found that 3.4 percent of patients need DC shock, which is lower than other studies such as Goldberg RJ's (19) study, which found a prevalence of 7.1 percent, and Holmes DR Jr's (20) study, which found a prevalence of 7.1 percent (20).

A decline in coronary perfusion occurs during ischemia, resulting in muscle hypoxia and necrosis, as well as a reduction in myocardial contractility, which leads to a decrease in cardiac output and a drop in arterial blood pressure. The body responds to this decrease by raising vasoconstriction in order to raise blood pressure; however, this process is only temporary, and coronary perfusion is further disrupted, resulting in myocardiac death (21). As a result, it's not surprising that the need for DC shock is substantially higher in STEMI patients who have experienced heart failure symptoms. However, there was no discernible difference in the types of arrhythmias between STEMI patients.

In our study, we found that the need for implantable device insertion is higher in UA patients who developed symptoms of heart failure. We recommended that patients with UA should be given more attention especially those who are at higher risk to develop heart failure symptoms.

Furthermore, we found that the number of affected vessels did not have an impact on type of arrhythmias in all patients considering patients of STEMI, NSTEMI and UA. This suggests that the number of affected vessels is unrelated to the type of arrhythmias and may be used as an indicator of the type of arrhythmias. This matches the findings of A Miller (22) and a report by P Brezinov (23).
In the present work, it was found that patients who received early B-blocker had a lower risk in developing arrhythmia during acute ischemic event.

Limitations

The main limitation of this study was the absence of control group therefore it is difficult to compare and ensure the reliability of the results. Moreover, this was a retrospective study which possesses some limitations including inability to determine causation of arrhythmias in different populations and un-avoided bias toward some populations. On the other hand, this study represents to our knowledge, the first study that deals with type of arrhythmias in Saudi Arabia.

Conclusion

In this retrospective study, the main types of arrhythmia were AF (26.8%), conduction disturbance (38.2%) and first-degree Heart block (9.1%). Moreover, the prevalence of patients represented with STEMI was 29 %. Development of arrhythmia that required DC shock is more common

in STEMI patients especially those who developed heart failure symptoms. The need for assessment of heart failure and EF in patients with UA is essential to determine the need for implantable device insertion while the number of affected vessels had no effect on the development of arrhythmias during the acute stage. Also early administration of b-blocker decreases the risk of development of arrhythmia during an acute ischemic event. Treating patients who are at high risk of atherosclerotic cardiovascular events with BB, needs further investigation and the outcome predicting factors of these patients may help in the identification of the best management. Until this issue is clarified, there is a need for more randomized clinical trials that will focus on the prognostic factors of early administration of BB as secondary preventive measure.

Acknowledgment
The authors gratefully acknowledge the cooperation of all participants.

Funding
The research was conducted with the financial assistance of Pfizer

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Knowledge, Attitude and Practice Toward the Use of Emergency Contraception Methods Among Women in the Kingdom of Saudi Arabia

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Received: July 2021; Accepted: August 2021; Published: September 1, 2021.
Citation: Rehab Alsaleh et al. Knowledge, Attitude and Practice Toward the Use of Emergency Contraception Methods Among Women in the Kingdom of Saudi Arabia. World Family Medicine. 2021; 19(9): 14-20.
DOI: 10.5742/MEWFM.2021.94119

Abstract

Unintended pregnancy is a common public health issue worldwide, especially in the MENA region. Unintended pregnancy has two subtypes (unplanned and unwanted).

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Emergency contraception (EC) plays a vital role in preventing unintended pregnancy up to 98% by delaying ovulation or preventing implantation. It is available over the counter in most of the Arab world. In our study the investigating group wanted to explore knowledge attitude and practice among women of Saudi Arabia towards EC. To achieve this objective a validated survey was used as study tool. It was found that there is improved knowledge, attitude and practice among women towards EC utilisation.

Key words: Emergency contraception methods, women, Saudi Arabia

Introduction

One of the most common public health issues worldwide is unintended pregnancy (both unplanned and unwanted). It is estimated that in the Middle East and North Africa (MENA) region, one in each four pregnancies are unintended, leading to unsafe abortions and jeopardizing the healthiness and well-being of women and their families (1).

Emergency contraception (EC) can play a vital role in preventing unintended pregnancies.

If used correctly, EC can prevent 98% of unintended pregnancies. It is assumed to work by stopping or delaying ovulation or preventing implantation if fertilization has already taken place. However, it does not interrupt an established pregnancy (2). It is ideally used after unprotected intercourse or a contraceptive accident to avoid unwanted pregnancy (3,4).

There are three major selections available for EC: progestin-only pills (POPs), combination oral contraceptives (COCs), and insertion of an intrauterine device (IUD). Despite its availability , it is not very commonly used (5).

Over the past many years contraceptives have been available in the Arab region (4) however, emergency contraception availability and advice is sparse and not very commonly used.

The current study was designed to assess the knowledge, attitude, and practice towards EC methods among women of childbearing age in Saudi Arabia.

Methodology

A cross-sectional, non-randomised convenient sample was selected to respond to the study survey.

A convenience sample (N=233,) was recruited through an externally validated survey sent online to the participants to which they responded anonymously. The study was conducted in Saudi Arabia for females who are currently living in KSA, and of childbearing age between 15-45. In addition to the supervisor's checks, the research team manually cleaned, verified, and coded all data in order to improve the quality of the research. For further analysis, the survey data was entered into (SPSS) Version 22 software. Level of significance for the present study=0.05 The sample size is based on G power software using effect size =0.3, alpha =0.05 and power=.95 with degree of freedom (5).

Results

The study aimed to assess the awareness of women living in Saudi Arabia regarding the use of emergency contraception methods. In this cross-sectional study, we collected 233 participants for the survey. We analysed data of 232 participants who matched our criteria and excluded 1 participant for refusing to sign the consent form.

As shown in Table 1, most of the participants were aged between 36-45 years (38.8%) and between 15-25 years (35.3%). More than half of the women were married (62.5%). The majority had bachelor's and above degrees and they are Saudi nationals.

Overall, 61 (26.3%) of the participants had good knowledge of EC. 63.4% of the respondents had heard about EC. Only 34.9%, 23.3% answered correctly on the efficacy, and the safety of using EC, respectively. Concerning their knowledge about the types of EC, more than half (62%) answered correctly.
About 16 of the participants (6.9%) have the wrong idea about EC as a method of abortion. Furthermore, eight women (3.4%) believe that using EC is to prevent sexually transmitted diseases. However, twenty-three women (9.9%) were aware of the appropriate quantity of EC pills. In addition, 47.4 percent of participants were aware that EC is allowed to be use in the Islamic religion (Table 2).

Only 25% of the participants received their information about EC from a health practitioner, 21.6% from media, and 20.3% from family and friends. When asked " what are the situations that EC is advised to be taken in?" they responded as follows: 2.2% if condom ruptures during intercourse, 9.5% when they miss taking the regular contraception, 1.3% when raped, 51.3% all of the above (Table 4). Moreover, out of 145 married women, 21 had used EC previously.

Overall, 53% had a negative attitude towards EC. Most of the participants (78 %) agreed our community needs to be more aware of EC. However, ninety-four women (40.5%) would use EC if they had unprotected intimate relations. About 26.3% would suggest EC to other women. In addition, 17.7% of the participants agreed that they would feel shy to ask for EC (Table 3).

Our study showed there was no statistically significant difference between good and poor knowledge, positive and negative attitudes of the participants related to their age, nationality, marital status, level of education, or occupation (Table 5).

Table 1: The sociodemographic data of the participants

		Count	Column N %
Age	15-25	82	35.3%
	26-35	60	25.9%
	36-45	90	38.8%
Nationality	Saudi	208	89.7%
	Non Saudi	24	10.3%
Marital status	Married	145	62.5%
	Unmarried	87	37.5%
Level of education	High school and below	20	8.6%
	Bachelor and above	212	91.4%
Occupation	Unemployed	84	36.2%
	Employed	79	34.1%
	Student	69	29.7%

Table 2: Participant's knowledge concerning emergency contraception

Questions		Count	Column N %
Have you ever heard of emergency contraception?	No	85	36.6%
	Yes	147	63.4%
How effective is emergency contraception in preventing pregnancy?	DK	140	60.3%
	Effective	81	34.9%
	Not effective	11	4.7%
Is emergency contraception safe for its users?	DK	161	69.4%
	No	17	7.3%
	Yes	54	23.3%
Is emergency contraception a method of abortion?	DK	149	64.2%
	Yes	16	6.9%
	No	67	28.9%
Can emergency contraception prevent sexually transmitted diseases?	DK	135	58.2%
	Yes	8	3.4%
	No	89	38.4%
In your opinion is emergency contraception forbidden in our Islamic Religion?	DK	113	48.7%
	Yes	9	3.9%
	No	110	47.4%
What are the types of emergency contraception?	DK	88	37.9%
	Morning after pills	62	26.7%
	Copper intra-uterine device	20	8.6%
	Both	62	26.7%
What is the maximum acceptable time for a woman to take emergency contraceptive pills after an intimate relation?	DK	136	58.6%
	Within 2 days	80	34.5%
	Within 5 days	16	6.9%
What are the recommended number of emergency contraceptive pill doses?	DK	135	58.2%
	One dose	74	31.9%
	Two doses	23	9.9%

(continued next page)

Table 2: Participant's knowledge concerning emergency contraception (continued)

What is the maximum acceptable time for a woman to use the copper intrauterine device after an intimate relation?	DK	184	79.3%
	Within 2d	21	9.1%
	Within 5d	27	11.6%
Where can a woman obtain emergency contraception?	DK	89	38.4%
	Black market	13	5.6%
	Pharmacy	130	56.0%
Total score/23: mean±SD			9.1±5.77 (39.6%)

Table 3 : Participant's attitude toward emergency contraception

Questions		Count	% Column N
I would use EC if I had an unprotected intimate relation	DK	109	47.0%
	Disagree	29	12.5%
	Agree	94	40.5%
Would you recommend EC to someone?	DK	124	53.4%
	Disagree	47	20.3%
	Agree	61	26.3%
In your opinion does the society need to raise awareness regarding the existence of EC?	DK	41	17.7%
	Disagree	10	4.3%
	Agree	181	78.0%
Would you feel shy to ask for EC	DK	87	37.5%
	Disagree	104	44.8%
	Agree	41	17.7%

Table 4:

Questions		Count	Column N %
What are your main sources of information on emergency contraception?	Family and friends	47	20.3%
	Health practitioner	58	25.0%
	Media	50	21.6%
	I never heard	77	33.2%
What are the situations that emergency contraception is advised to be taken in?	DK	83	35.8%
	If condom ruptured during intercourse	5	2.2%
	When you miss taking your regular contraceptives	22	9.5%
	Raped	3	1.3%
	All of the above	119	51.3%

Table 5: Comparison between good and poor knowledge, positive and negative attitude related sociodemographic data of the participated

		POOR knowledge	GOOD knowledge	P value	NEG attitude	POSITIVE Attitude	P
Age	25-15	(%32.7) 56	(%42.6)26	383.	(%37.4)46	(%33)36	507.
	35-26	(%26.9)46	(%23) 14		(%22.8) 28	(%29.4)32	
	45-36	(%40.4)69	(34.4)21		(%39.8)49	(%37.6)41	
Nationality	Saudi	(%88.3)151	(%93.4)57	0.258	(%87)107	(%92.7)101	157.
	non Saudi	(%11.7)20	(%6.6)4		(%13)16	(%7.3)8	
Marital status	Married	(%61.4)105	(%65.6)40	564.	(%58.5)72	(%67)73	185.
	Unmarried	(38.6)66	(%34.4)21		(%41.5)51	(%33)36	
Level of education	High school and below	(%9.4)16	(%6.6)4	504.	(%7.3)9	(%10.1)11	452.
	Bachelor and above	(%90.6)155	(93.4)57		(%92.7)114	(%98.9)98	
Occupation	Unemployed	(%38)65	(%31.1)19	617.	(%35.0)43	(%37.6) 41	891.
	Employed	(%32.7)56	(%37.7)23		(%34.1) 42	(%33.9)37	
	Student	(%29.2)50	(%31.1)19		(%30.9)38	(%28.4)31	

Discussion

Our study aim was to assess the awareness of women living in Saudi Arabia regarding the use of emergency contraception methods. As per the current study, our findings showed a minor improvement in the knowledge of the study sample regarding EC compared to earlier studies done in Saudi Arabia.

It suggests that women are more aware of EC and its execution.

However, there is still need for action to be done in terms of disseminating information within the community.

The majority of the information on EC comes from a family practitioner, according to our results.

There are still obstacles for attendants and their patients to discuss contraception alternatives.

For health-care practitioners, it will take extra effort to raise awareness. According to the findings, even among those who are aware that the EC service is accessible, its use is extremely limited.

There was little difference from prior studies, which could indicate that a new awareness methodology is needed to demonstrate the efficacy and safety of such an approach in avoiding unintended pregnancy. According to our study results, there is still a long way to go before we recognize EC's important role in family planning.

Several interventions are needed among health care providers and society members, especially among women.

Utilization of social media may help in distributing the correct knowledge to the required sectors, including community scholars which may help in the acceptance of the EC concept from a religious perspective.

Finally, the fact that this study did not allow for healthcare practitioner views is a constraint to consider when interpreting the findings. Another restriction of this study is its cross-sectional design, which prevents the investigation of causal links between the variables studied

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Knowledge, attitude and practice towards heat related illnesses of the general public of Jeddah, Saudi Arabia

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Received: July 2021; Accepted: August 2021; Published: September 1, 2021.
Citation: Fathi El-Gamal, Ahmed Ghandoura, Abdullah Alammari, Bushra Alghamdi, Lama Babhair, Sali alsabhani. Knowledge, attitude and practice towards heat related illnesses of the general public of Jeddah, Saudi Arabia. World Family Medicine. 2021; 19(9): 21-30 DOI: 10.5742/MEWFM.2021.94120

Abstract

Background: Heat related illness can be avoided; it may also be present in a milder form to a life threatening condition.

Objectives: To explore the pattern of KAP towards HRIs among the subjects in Jeddah city.

Method: It was a cross-sectional study of 378 subjects, who gave their responses through an online Google form. Data were analyzed using SPSS software version 23. The level of significance was 0.05%.

Results: 18.2% of the subjects suffered from HRIs, and 49% never received health education about HRIs. Increased KAP score was associated with increased age (b= 0.177, p<0.000), more encountered in the females (b= -2.25, p <0.000), in those who owned air conditioning (b = 5.3, p < 0.024), in the smokers (b= 1.77, p<0.35), and in those who received health education about HRIs (b=2.327, p< 0.000).

Conclusions: The subjects' awareness of the prevention of HRIs needs to be strengthened.

Key words: Heat related illnesses, Determinants, Saudi Arabia

Introduction

Heat related illness (HRIs) are health disorders that range from mild forms to life threatening conditions; but they can be prevented. People with chronic medical conditions such as diabetes mellitus, obesity or cardio-vascular disorders, are more vulnerable to the effects of heat (1). Saudi Arabia is one of the sunniest and hottest countries in the world (2). Heat waves (3 or more days at or above 35°C) were associated with an increase in ambulance transport and significant increases in admissions of all ages in renal and psychiatric hospitals, and a rise in admissions to ischemic heart disease centres in the 65- to 74-year age group (1,3-5). The most common morbidities assessed in these relationships were: cardiovascular and respiratory disorders such as stroke, acute myocardial infarction, acute coronary syndrome, and asthma. Heat stroke is defined as decreased level of consciousness of a person with a temperature more than 40 degrees, which is considered as an absolute emergency case and a life-threatening condition. The patient may suffer also, from inappropriate behavior, ataxia or collapse, tachypnea, and tachycardia. It may cause a multi-organ failure which leads to a poor prognosis (6). Heat stroke consists of two types: exertional heat stroke that affect persons who are doing vigorous physical activities in a hot climate like runners, and classic or non-exertional heat stroke that affects persons in hot indoor area or of old ages(7). Despite treatment, the mortality rate of heat stroke in the United States is still increasing up to 30% (6). Heat exhaustion results from depletion and dehydration of intravascular volume caused by prolonged effort in a hot environment. It is characterized by symptoms of fatigue, intolerance of effort, weakness, headache, nausea, tachycardia and sometimes dyspnea (8). Heat rash can occur in humid or tropical areas when the exocrine sweat glands get clogged during prolonged or profuse sweating. Moreover, it manifests as an erythematous pruritic rash with blisters that is frequently seen on the neck, trunk and limbs, but sparing hands and feet (6). One of HRIs' forms is heat cramps which results from drinking hypotonic fluid to compensate the excessive amount of sweat sodium losses, hich results in extracellular fluid volume contraction and deformation of nerve during muscle contractions (4,6,9). The National Collegiate of Athletic Association (NCAA) reported that the most frequent heat illness that presented among NCAA athletic trainers, were heat cramps, followed by heat exhaustion, and dehydration(10). A previous study reported that most participants had a poor knowledge level and practice towards HRIs, which was improved after education (5). The risk factors for HRIs include two main variables, which are environmental and personal factors; the environmental factors include humiditys and very high temperatures in the country. Personal factors are many and include: ethnicity, health condition, genetics, physical activity levels, type of clothing, and hydration status (11,12). The present study aimed at exploring the KAP of Jeddah city population about HRIs.

Methodology

It was a cross sectional study, and the sampling method was a non-probability convenient one where data were collected through online Google forms on residents of Jeddah, Saudi Arabia. Sample size was determined using G*power software, where α = 0.05, Power = 0.95 effect size = 0.3, and degree of freedom= 5(13). The minimal sample size required was 277 subjects; thus, 378 subjects were enrolled in the present study. Data were collected using structured questionnaire which provided information on socio-demographic characteristics, hobbies, habits and clinical aspects of the participants. A questionnaire on the KAP about HRIs was studied and validatedpreviously(12, 14). The Knowledge was assessed by 25 questions; each question was answered by yes or no, and the correct answer was given score of 1, and the wrong answer was given score of 0; the total scores of the Knowledge was the sum of all scores. Attitude was assessed by 8 questions; each question was answered by yes or no, and the correct answer was given 1 and the incorrect one was given a score of 0; the total attitude score was the sum of all scores. The practice was assessed by 12 questions; each question was answered by yes or no, and the correct answer was given a score of 1, and the incorrect one was given a score of 0; the total scores of the practice was the sum of all scores. Reliability study was conducted on the questionnaire responses (Cronbach` alpha for knowledge questions was 0.82, for attitude questions was 0.78, and for practice questions was 0.74). The software SPSS (IBM compatible version 23), was used to analyze the data. Chi square test and multiple linear regression were used to analyze the data. The level of significance for the present study was 0.05%.

Availability of the data: the row data is available at the research center of ISNC and all results of the data are included in the paper.

Results

The total number studied was 378 subjects; 156 females (41%), while the number of males was 222 (58.7%). Table 1 shows the general characteristics of the studied subjects. Among the studied subjects, 18.2% (69) had ever suffered from HRIs. Almost half of the studied subjects (49%) never received health education about health effects of HRIs.

Table 2 reveals the mean scores and correlation matrix for the variables knowledge, attitude and practice. The mean knowledge score was 13.9 (SD=4.3), the mean attitude score was 4.7 (SD=1.5), and the mean practice score was 28.9 (SD=3.4). The knowledge score was significantly correlated with attitude score ($r = 0.210$, $p < 0.000$), while it was not significantly correlated with the practice score ($r = 0.06$, $p < 0.229$). On the other hand, the attitude score was significantly associated with the practice score ($r = 0.357$, $p < 0.000$).

Table 3 displays the correct answers on the knowledge questions about HRIs by gender. About one third of all the respondents got the answers wrong. Knowledge of the males about HRIs was better than that of the females in general. Questions about effects of heat stress on patients with cardiovascular disorders had the lowest correct answer scores. The occurrence of HRIs while asleep (in shaded area) had the lowest correct answer score (23.8%).

Table 4 displays the correct answers on the attitude questions about HRIs by gender. About one third of the respondents answered positively on the attitude questions regarding HRIs. However, questions on use of umbrella (20%), or use of sun screen cream (35.7%) while in an unshaded area outdoors, had the lowest correct answers. Females tend more to use more sun screen cream compared to males (p<0.001).

Table 5 shows the correct answers on the practice questions about HRIs by gender. The majority of the respondents adopted appropriate practice while inside the home; however, a great proportion of the respondents adopted the wrong practice while outdoors exposed to heat in the unshaded environment.

Table 6 shows factors which predict the total KAP score among studied subjects. Increased age was significantly associated with increased KAP score (b= 0.177, p<0.000). Mean KAP score was significantly higher in females compared to males (b= -2.25, p <0.000). Those who owned AC, and similarly those who owned fans, had significantly higher mean KAP score compared to those who had not (b = 5.3, p < 0.024).. Smokers had significantly higher KAP score compared to non-smokers (b= 1.77, p<0.35). Subjects who received health education about HRIs had higher KAP score compared to those who did not (b=2.327, p< 0.000).

Table 1: Characteristics of the study subjects

Variable		Frequency	Percentage (%)
Gender	Female	156	41.3
	Male	222	58.7
Educational level	< University	60	15.9
	≥ University	318	84.1
Occupation	Not Employed	262	69.3
	Employed: indoor work	103	27.2
	Employed: outdoor work	13	3.4
Health care professional	No	223	59.0
	Yes	155	41.0
Smoking	No	310	82.0
	Yes	68	18.0
	Own Air conditioning		
	No	7	1.9
	Yes	371	98.1
Own Air Fan	No	228	60.3
	Yes	150	39.7
Received treatment for Diabetes Mellitus	No	369	97.6
	Yes	9	2.4
Received treatment for Heart disease	No	370	97.9
	Yes	8	2.1
Received treatment for HTN	No	361	95.5
	Yes	17	4.5
Received treatment for other diseases	No	342	90.5
	Yes	36	9.5
Suffered from HRI	No	309	81.8
	Yes: Doctor-diagnosed	22	5.8
	Yes: self-diagnosed	47	12.4
Received HE about HRI:	No	184	48.7
	Yes, media	78	20.6
	Yes, Health care personnel	82	21.7
	Yes, Relatives/ friends	34	9.0

Table 2: Correlation matrix and descriptive statistics of the scores of Knowledge, Attitude, and Practice about HRI among studied subjects

Variables	Statistics	Knowledge score	Attitude score
Knowledge score	Pearson Correlation	1	-
	Significance (2-tailed)	-	-
	Mean	13.8677	-
	Standard deviation	4.32665	-
Attitude score	Pearson Correlation	.210**	-
	Significance (2-tailed)	.000	-
	Mean	4.7302	-
	Standard deviation	1.50197	-
Practice score	Pearson Correlation	.062	.357**
	Significance (2-tailed)	.229	.000
	Mean	28.9101	-
	Standard deviation	3.40656	-

Table 3: Distribution of studied subjects according to correct answers about knowledge on HRI by gender

Variable	Gender		Total [N=378]	X^2 (p-value)
	Females (N=156)	Males (N=222)		
Usage of cooling devices prevents heat stroke [Yes]	27.2%	32.8%	60.1%	3.98 (<0.04)
Wearing thick clothes prevents heat stroke [No]	29.4%	39.9%	69.3%	0.42 (<0.51)
Staying at cool spots prevents heat stroke [Yes]	33.3%	44.4%	77.8%	1.37 (<0.24)
Cooling body down prevents heat stroke [Yes]	29.9%	39.4%	69.3%	1.22 (<0.27)
Dehydration is one of the symptoms of heat stroke [Yes]	24.3%	43.1%	67.5%	8.71 (<0.003)
Tiredness is one of the symptoms of heat stroke [Yes]	37.3%	48.1%	85.4%	5.20 (<0.023)
Dizziness and light-headedness are symptoms of heat stroke [Yes]	37.6%	52.4%	89.9%	0.34 (<0.56)
Headache is one of the symptoms of heat stroke [Yes]	32.0%	41.0%	73.0%	2.79 (<0.09)
Feeling nauseous is one of the symptoms of heat stroke [Yes]	31.2%	37.0%	68.3%	6.69 (<0.000)
Reduction in appetite is one of the symptoms of heat [No]	29.6%	37.8%	67.5%	2.27 (<0.13)
Sweating is a symptom of heat related disorders [Yes]	34.1%	40.7%	74.9%	8.64 (<0.003)
Muscle cramp is a symptom of heat related disorders [Yes]	20.9%	28.0%	48.9%	0.20 (<0.657)
Sweating reduces body temperature [yes]	27.8%	42.6%	70.4%	0.96 (<0.33)
Sweating negatively affects people with hypertension or cardiac diseases [Yes]	11.1%	16.9%	28.0%	0.84 (<0.722)
People sweat when not really feeling the heat [Yes]	26.5%	39.4%	65.9%	0.25 (<0.62)
Sweating a lot makes people exhausted [Yes]	25.1%	42.1%	67.2%	4.31 (<0.038)
Heat stroke makes people thirsty [Yes]	29.1%	41.3%	70.4%	0.001 (<1.00)
Heat stroke getting worse [Yes]	26.5%	36.0%	62.4%	0.21 (<0.65)
Hypertensives or cardiac patients are more likely to get heat stroke [Yes]	12.7%	16.7%	29.4%	0.15 (<0.69)
Heat stroke occurs during sleep [Yes]	7.7%	16.1%	23.8%	3.5 (<0.06)

Table 4: Distribution of studied subjects according to Correct answers about Attitude on HRIs by gender

Variables	Gender		Total (N=378)	X^2 (p-value)
	Females (N=156)	Males (N=222)		
Drink more water during a hot day even if you are not thirsty (yes)	25.4%	42.3%	67.7%	4.651 (<0.031)
Use an umbrella in unshaded areas while outdoor (yes)	7.4%	12.7%	20.1%	0.769 (<0.38)
While outdoor, if it became extremely hot, you would postpone your business until it becomes cooler (yes)	26.2%	34.9%	61.1%	0.617 (<0.432)
If possible, preform outdoor business at night (yes)	31.5%	42.6%	74.1%	0.674 (< 0.412)
Even if it is crowded I will perform the outdoor business in the afternoon (No)	32.5%	41.0%	73.5%	3.837 (<0.050)
Willing to buy an umbrella (Yes)	31.7%	27.8%	59.5%	33.376 (<0.001)
Use a sunscreen while going outdoors during the day (Yes)	24.9%	10.8%	35.7%	69.684 (<0.001)
Drink soft drinks or coffee when I feel thirsty (No)	34.4%	46.8%	81.2%	0.780 (<0.377)

Table 5: Distribution of studied subjects according to Correct answers about practice on HRI by gender

Variable	Gender		Total (N=378)	X2 (p-value)
	Females (N=156)	Males (N=222)		
Hours of use AC in daytime (until sunset) {more than 5 hours}	34.1%	44.2%	78.3%	8.714 (<0.12)
Hours of use AC in nighttime (until sunrise) {More than 5 hours}	33.3%	42.9%	76.2%	7.086 (< 0.02)
Temperature you start using AC {Less than 26 C}	31.7%	52.1%	83.9%	9.649 (< 0.02)
Room temperature setting {Less than 26°C}	23.3%	40.5%	63.8%	6.606 (< 0.08)
Hours you use an electric fan a day {Rarely}	31.7%	45.5%	77.2%	0.669 (<0.88)
Use a fan {Do not use a fan when using AC}	23.8%	31.2%	55.0%	3.991 (<0.262)
Drink fluid (excluding liquids induded in meals) {drink sometimes even if did not feel thirsty}	18.5%	24.3%	42.9%	3.84 (< 0.27)
Kinds of clothes did you wear {short-sleeved clothing and short pants}	33.3%	43.7%	77.0%	2.47 (< 0.29)
Take a rest when you were active (doing agriculture, fishery and walking) {tried to take a rest regularly}	15.6%	18.0%	33.6%	8.79 (< 0.03)
Active (doing agriculture, fishery and walking) during the hottest period of days (10 am to 4 pm) {sometimes refrained from being active}	14.8%	22.2%	37.0%	9.84 (< 0.02)
Active (doing agriculture, fishery and walking) during the hottest period of days (10 am to 4 pm) {tried to refrain from being active}	13.8%	16.4%	30.2%	9.84 (< 0.02)
Use a hat or parasol when going outside {never}	23.8%	30.7%	54.5%	1.115 (< 0.77)

Table 6: Linear Multiple regression analysis of some continuous independent variables and dependent KAP score variable

Independent variables	Unstandardized Coefficients		Standardized Coefficients	t-test	Sig. *P-value*
	B	Std. Error	Beta		
(Constant)	36.345	2.535		14.336	.000
Age	.177	.034	.314	5.178	.000
Gender	-2.252	.641	-.174	-3.513	.000
Education level	.231	.868	.013	.266	.790
Employment	-.681	.642	-.058	-1.060	.290
Health care profession:	.866	.690	.067	1.255	.210
Own AC	5.329	2.345	.113	2.273	.024
Own a fan	1.271	.634	.097	2.004	.046
Smoking	1.770	.836	.107	2.118	.035
Treatment for DM	-.559	2.048	-.013	-.273	.785
Treatment for Heart disease	-4.115	2.736	-.093	-1.504	.133
Treatment for hypertension	2.109	1.973	.069	1.069	.286
Treatment for any other chronic disease	-.141	1.111	-.007	-.127	.899
Received health education before	2.327	.644	.182	3.611	.000
Affected by heat before	-.898	.865	-.054	-1.038	.300

Discussion

Extreme hot environment can be dangerous to human health; several studies reported that it was associated with increased hospital admissions due to HRIs, as well as cardiovascular and respiratory disorders. Extreme heat events can trigger a variety of heat stress conditions, such as heat stroke(1,3-5). Awareness of the people about the risks, knowledge, and protective practices about HRIs are essential factors for preventing the harmful effects of an extremely hot environment(15). However, to our knowledge this is the first study to explore the people's KAP with regard to HRIs in Jeddah, KSA. Such a study may be of great significance as the majority of the subjects are widely exposed to risk factors of HRIs. Therefore, the findings of this study may provide essential references for the health authority to implement health education programs to the general public.

In this survey, a large proportion of the respondents had low scores on most K-questions and had defective information about awareness and protective practice towards HRIs. The defect was related to gender, age, practice of the subjects and previous education on HRIs. Heat stroke results from excessive exposure to a hot environment, which lead to progressive increase in the core temperature of the body. Cooling devices, including neck-cooling collars, cooling bandanas, cooling vests, neck-cooling devices, and clothing containing cooling micro-gels, have been effectively used to reduce core temperature(16). In the present study 40% of the subjects did not know that using cooling devices could prevent heat stroke. The type of clothing will affect how well air can circulate over the skin, as well as allowing heat and moisture (sweat) to evaporate. If sweat cannot evaporate from the skin, then both skin temperature and discomfort increase (17). However, in the present study around 70 % of the subjects did not know that heavy clothes could worsen the effects of high heat on the body. According to the center for diseases control and prevention (CDC) advised, those living in a hot environment, to Stay in Cool Indoors by Staying in an air-conditioned place as much as possible and drink plenty of fluids(18). In this study around 32% of participants did not realize that they can prevent heat stroke by staying in cool spots. Furthermore, CDC mentions warning signs and symptoms of HRIs(19). A sizable proportion of the subjects in the present study, did not know that dehydration, tiredness, dizziness and light-headiness, headache, nausea, reduction in appetite and sweating are symptoms of HRIs; and almost half of the subjects did not know that heat exposure could produce cramps. Several studies reported that exposure to extreme heat was associated with worsening of chronic diseases including diabetes, cardiovascular, respiratory, renal, and mental illnesses (14,20–24). However, in the present

study a large proportion of the respondents didn't know that excessive sweating and extreme heat exposure could affect the conditions of patients with chronic diseases for example hypertension and cardiac diseases.

In response to the question about attitude and practice, in China 1.9% of the participants were aware that proper heat-related illness preventive measures are needed(25). In the present study the majority of the respondents had a good attitude about HRIs prevention except for a minor subgroup.

Since most skin cancers are preventable by reducing natural and artificial ultraviolet (UV) radiation exposure, public education on and advocacy for sun protection are essential. Two key messages regarding sun safety education are the regular use of sunscreen and physical protective agents, such as clothing, hats, sunglasses, and shade(26). In the present study, the majority of the respondents didn't use an umbrella, or put on sunscreen when they were in a hot un-shaded outdoor environment. Soft drinks including carbonated drinks, still and juice drinks, fruit juices, bottled waters, sports and energy drinks should be avoided (27). Intake of sugary beverages, and especially soft drinks, increases the risk of obesity and diabetes. But they are now emerging as a major risk factor for kidney disease (28). Tea and coffee, which were most frequently chosen by the workers, contain caffeine, but a recent literature review does not support caffeine as it may cause diuretic effect and harmful dehydration(29). In the present study the attitude of the respondents toward not drinking soft drinks or coffee when feeling thirsty in a hot environment was right in 81.0%. Factors associated with decreased risk of morbidity and mortality from exposure to waves of hot climate included the use of home air-conditioning and spending more time in air- conditioned places(30). In the present study the majority of the respondents used AC during day and night. Drinking water and plenty of fluids, in hot environment, are important protective measures against dehydration due to sweating(29). In the present study almost half of the respondents did not drink fluids when they are not thirsty in a hot environment. This is consistent with findings from previous study (31) In the present study the majority of the subjects didn't avoid working outdoors during the sunniest period of the day, and didn't take rest periods, and almost half of the subjects did not wear a hat when they were outdoors. This is contrary to studies conducted elsewhere (25, 31). The majority of the respondents (77%) used short sleeved clothing and short pants when they went outdoors in the hot environment. This is consistent with another study (32).

Conclusions

The KAP study results show that participants' knowledge level about heat waves was relatively high in Jeddah city. However, some participants did not consider themselves to be potentially vulnerable, and had low knowledge on the subject. Certain aspects of the attitude and practice about HRIs of the majority of the subjects need to be improved. The government should focus on health education through mass media campaigns to improve awareness regarding the negative effects of heat waves among the entire population.

Acknowledgement:
All the authors are grateful to ISNC for medical Sciences for approving the study and giving it consent and, we would like to thank all subjects who spent time to fill in this questionnaire and participate in this survey.

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Intertrochanteric Fracture Treated by Dynamic Hip Screw, Aden, Yemen

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Received: July 2021; Accepted: August 2021; Published: September 1, 2021.
Citation: Abdulsalam Abdullah Hadi Mohsen. Intertrochanteric Fracture Treated by Dynamic Hip Screw, Aden Yemen . World Family Medicine. 2021; 19(9): 31-38 DOI: 10.5742/MEWFM.2021.94122

Abstract

Objective: To evaluate the clinical outcomes of intertrochanteric fractures that were treated with Dynamic Hip Screw in Aden

Patients and method: This was a retrospective study of patients presenting with intertrochanteric fracture, to the Department of Orthopaedic Surgery at Algamhoria Teaching Hospital and at two private hospital in Aden, Yemen, during the period January 2018–December 2019. The patients were treated with Dynamic Hip Screw (DHS).

All information was obtained from the patient charts.

The collected data was tabulated and statistical analysis was done by estimating rates, means and standard deviations. Fisher test was used and p-value < 0.05 was considered as statistically significant. The statistical software package SPSS version 17 was used.

Results: Out of 48 patients, 29 patients were females (60.4%) and 19 patients (39.6%) were males and the mean age was 75.1±7.4 years. The mean age of male patients was 76.4 ± 6.9 years while for females was 74.2±7.7 years. The age ranged between 62 to 90 years.

The patients were categorized into 3 age groups: Group (I) ≤ 70 years old, (27.1%) were females and (10.4%) were males, Group (II) from 71 – 80 years old, (20.8%) were females and (14.6%) were males. Group (III) from 81 – 90 years old, (12.5%) were females and (14.6%) were males, (p > 0.05). Causes of injury were simple fall in most of the cases (79.1%).

The causes of injuries were significantly different among the age groups of patients (P < 0.05).

We found (58.3%) of intertrochanteric fractures were in the right side and (41.7%) were in the left side. The stable fractures were (52.1%) while unstable fractures were (47.9%).

According to Evan classifications (31.3%) of the intertrochanteric fractures were classified as Type I and (20.8%) were classified as Type II. Type III were predominant with (47.9%).

Superficial stitch infection were (4.2%) and (4.2%) were deep infection.

Shortening of 1-2cm occurred in (10.4%) of patients. Mal-union occurred in (20.8%) cases. Delayed union occurred in (10.4%) cases.

Active physiotherapy is given regularly for delayed union. Deep vein thrombosis developed in (8.4%) of cases and pulmonary thrombosis occurred in (4.2%) of cases.

Conclusion: The dynamic hip screw is a modality of choice in patients with intertrochanteric fracture; it is effective, simple, and safe. Further studies are needed to compare between our modality and other modalities.

Key words: dynamic hip screw, intertrochanteric fracture, femur, Aden, Yemen

Introduction

Intertrochanteric fractures are defined as extracapsular fractures of the proximal femur that occur between the greater and lesser trochanter. The intertrochanteric aspect of the femur is located between the greater and lesser trochanters and is composed of dense trabecular bone. The greater trochanter serves as an insertion site for the gluteus medius, gluteus minimus, obturator internus, piriformis, and site of origin for the vastus lateralis. The lesser trochanter serves as an insertion site for the iliacus and psoas major, commonly referred to as the iliopsoas [1,2].

The intertrochanteric fractures are classified as stable and unstable fractures according to the fracture fragment and direction of the fracture line [3]. A stable intertrochanteric fracture is a two-part fracture with a fracture line along the trochanter line, whereas an unstable intertrochanteric fracture is one where comminution of the posteromedial buttress exceeds a trochanteric fragment or where the fracture lines are within the subtrochanter [4]. Clinical results have indicated that the conventional Dynamic Hip Screw (DHS) can provide beneficial stability for simple and non-osteoporotic fractures but is unable to provide stable fixation for unstable or osteoporotic intertrochanteric fractures. Although use of DHS for stable intertrochanteric hip fracture fixation has been successful in fracture healing for more than 20 years, DHS fixation on unstable fractures has a failure rate of 3–26% [5,6,7], especially in osteoporotic fractures. Because the posteromedial buttress is the most crucial supporting point in load bearing [8], a single DHS fixation cannot provide stable fixation of a lesser trochanter fragment in an unstable intertrochanteric fracture. Supplemental fixation of the posteromedial buttress is required in unstable intertrochanteric fractures.

Femoral intertrochanteric fractures have been estimated to occur in more than 2,000,000 patients each year in the United States [9].

Closed methods of treating intertrochanteric fractures have been abandoned. Rigid fixation with early mobilization of patients should be considered as the standard treatment [10]. Although many devices can achieve rigid fixation, the dynamic hip screw (DHS) is the most commonly used device for intertrochanteric fractures [11,12].

The intertrochanteric fracture is one of the most common fractures of the hip in the elderly, and usually is a result of low-energy trauma [13]; it accounts for up to 48% of all hip fractures [14]. These fractures are associated with substantial morbidity and mortality, mechanical complications, and great financial burden to patients and their families[15].

Objective

To evaluate the clinical outcomes of intertrochanteric fractures that were treated with Dynamic Hip Screw in Aden.

Patients and Method

We retrospectively reviewed all charts of patients presenting with intertrochanteric fracture to the Department of Orthopaedic Surgery at Algamhoria Teaching Hospital and at two private hospitals in Aden, Yemen, over a 2-year period (January 2018–December 2019).

During the period, there were 48 patients with intertrochanteric fractures treated with Dynamic Hip Screw (DHS) and the postoperative follow up of the patients was at least 6 months in the outpatient units. The surgical technique, which we performed, was as follows:

Reduction of bones is usually achieved by first pulling in the direction of the long axis of the leg in order to distract the fragments and regain length.

Next comes the internal rotation; the reduction must be checked in both anterior-posterior (AP) and lateral with an image intensifier.

Insert the guide wire through the aiming device and advance it into the subchondral bone of the head, stopping 10 mm short of the joint.

In cases of Evan type 1 and Evan type 2, we used the DHS screw and 3 to 4 holes side plate with 3 to 4 screws. We placed the lag screw in the center or lower third in the anterior posterior view, and central on lateral view.

In cases of Evan type 3 we add Trochantric Stabilizing Plate (TSP). We keep the tip-apex distance of less than 25 mm. All information was obtained from the patient charts.

The collected data were sex, age, cause of injury, side, stability, Evan classification and postoperative complications.

The collected data were tabulated and statistical analysis was done by estimating rates, means and standard deviations. Fisher test was used and p-value < 0.05 was considered as statistically significant. The statistical software package SPSS version 17 was used.

Results

Out of 48 patients, 29 patients were females (60.4%) and 19 patients (39.6%) were males and the mean age was 75.1±7.4 years. The mean age of male patients was 76.4 ± 6.9 years while for females it was 74.2±7.7 years. The age ranged between 62 to 90 years; Table 1 and Figure 1.

As shown in Table 2 the patients were categorized into 3 age groups: Group (I) ≤ 70 years old, 13 (27.1%) were females and 5 (10.4%) were males, Group (II) from 71 – 80 years old, 10 (20.8%) were females and 7 (14.6%) were males. Group (III) from 81 – 90 years old, 6 (12.5%) were females and 7 (14.6%) were males. The difference between values shows no statistical significance ($p > 0.05$).

Table 1: Distribution of demographic characteristics of the study patients (n = 48)

Variable	Ratio	Range	Mean	No	%	p-value
Sex:						
Females				29	60.4	
Males				19	39.6	
Female to male	1.5:1					
Age range (years):		62-90				
Mean age ± SD* (years):						
All patients			75.1 ±7.4			P > 0.05
Male patients			76.4 ±6.9			
Female patients			74.2 ±7.7			

SD*: Standard deviation.

Figure 1: Distribution of study patients related to sex

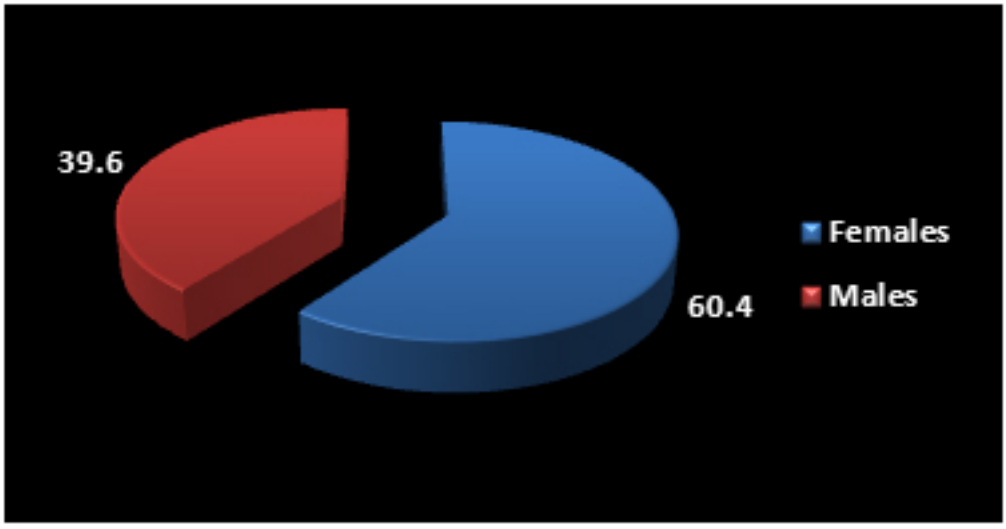


Table 2: Distribution of Age groups and Causes related to sex of the study patients (n=48)

Variables	Sex				Total		P-value
	Females		Males				
	No	(%)	No	(%)	No	(%)	
Age groups (years):							
≤ 70	13	(27.1)	5	(10.4)	18	(37.5)	
71 – 80	10	(20.8)	7	(14.6)	17	(35.4)	P > 0.05
81 – 90	6	(12.5)	7	(14.6)	13	(27.1)	
Cause:							
Simple fall (slipping)	22	(45.8)	16	(33.3)	38	(79.1)	
Fall Down (fall on stairs)	5	(10.4)	2	(4.2)	7	(14.6)	P > 0.05
Road Traffic Accident	2	(4.2)	1	(2.1)	3	(6.3)	

In this study, mechanisms of injury were simple fall in most of the cases 38 (79.1%) patients, fell on stairs 7 (14.6%) patients and Road Traffic Accident (RTA) in 3 (6.3%) patients; Figure 2. There is no statistical relation between causes of injuries and sex ($p > 0.05$).

The causes of injuries were significantly different among the age groups of patients ($P < 0.05$). The age group 71-80 years was injured in simple falls 17 (35.4%).

Injuries due to fall down were among the age group ≤70 years old 7 (14.6%) and also road traffic accidents 3 (6.3%) were among the age group ≤70 years old. Those 81-90 years old were injured through simple falls (slipping) 13 (27.1%) as shown in Table 3.

Twenty eight (58.3%) of intertrochanteric fractures were in the right side and 20 (41.7%) were in the left side. The stable fractures were 25 (52.1%) while unstable fractures were 23 (47.9%). According to Evan classifications 15 (31.3%) of the intertrochanteric fractures were classified as Type I and 10 (20.8%) were classified as Type II. Type III were predominant with 23 (47.9%) as shown in Table 4.

Four cases developed wound infection, 2 (4.2%) of them were superficial stitch abscess and 2 (4.2%) were deep infection, Table 4. The treatment protocol for superficial infection was continuation of antibiotics and daily dressing.

The 2 cases of deep infection were treated with thorough irrigation, excision of slough and debridement of infective material with continuation of antibiotics sensitive to the organism. Also in Table 4 we found shortening of 1-2cm occurred in 5 (10.4%) patients; none of them had any functional deficit. Mal-union occurred in 10 (20.8%) cases. Delayed union occurred in 5 (10.4%) cases. Active physiotherapy was given regularly for delayed union. Deep vein thrombosis developed in 4 (8.4%) cases and pulmonary thrombosis occurred in 2 (4.2%) cases, as shown in Table 4 and Figure 3.

Figure 2: Causes of intertrochanteric fracture

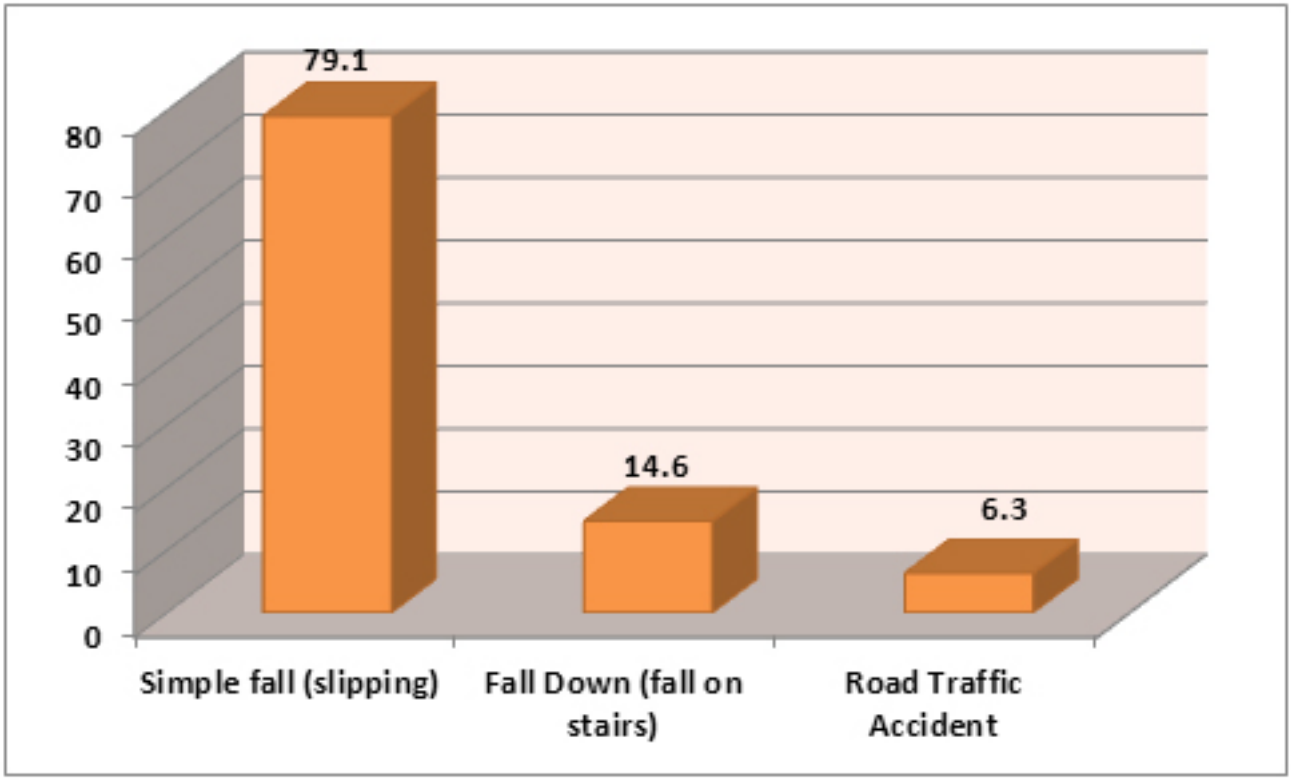


Table 3: Distribution of causes related to age groups of patients

Variables	Causes						Total	
	Simple fall		Fall Down (on stairs)		RTA			
	No	(%)	No	(%)	No	(%)	No	(%)
≤70	8	(16.7)	7	(14.6)	3	(6.3)	18	(37.5)
71-80	17	(35.4)	0	(0.0)	0	(0.0)	17	(35.4)
81-90	13	(27.1)	0	(0.0)	0	(0.0)	13	(27.1)
Total	38	(79.2)	7	(14.6)	3	(6.3)	48	(100)

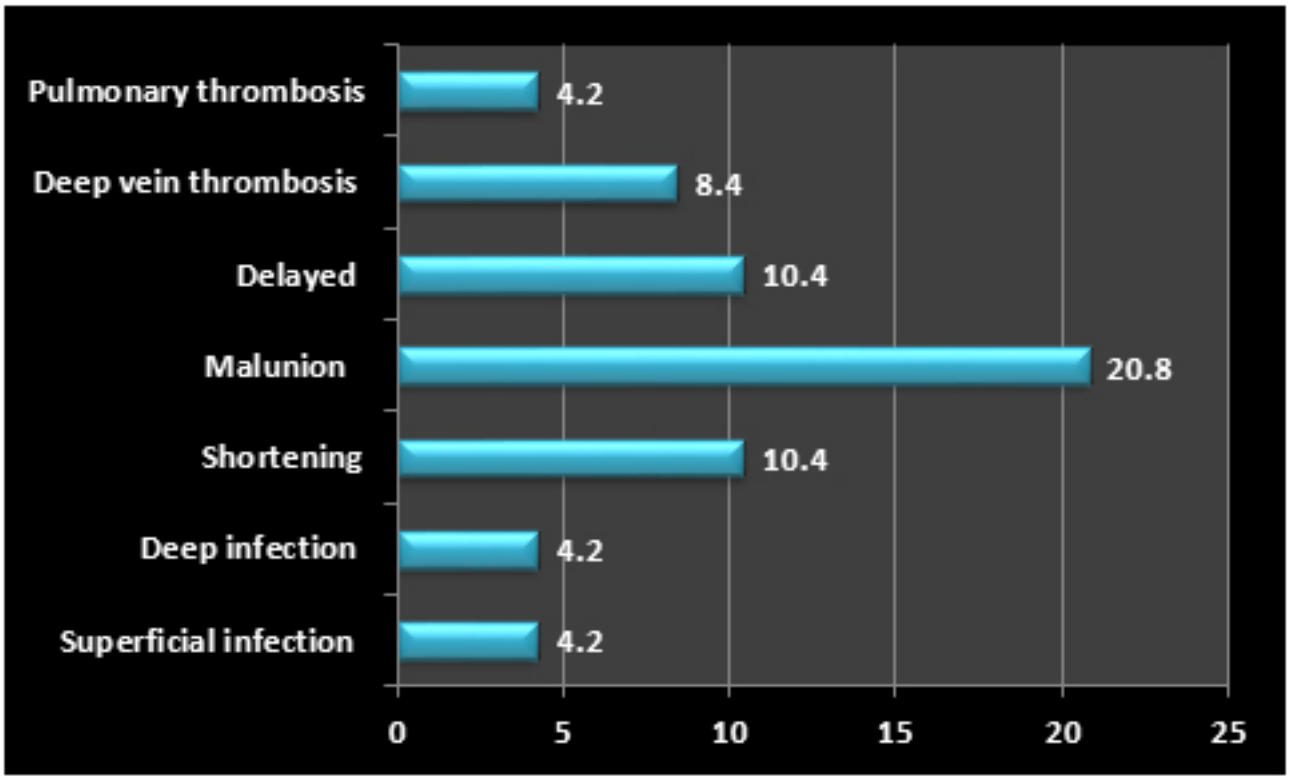
P = 0.000

Table 4: Distribution of characteristics and complications of intertrochanteric fractures (n = 48)

Variables	No	%
Side:		
Right	28	58.3
Left	20	41.7
Stability:		
Stable	25	52.1
Unstable	23	47.9
Evan Classification:		
Type I	15	31.3
Type II	10	20.8
Type III	23	47.9
Superficial infection:		
No	46	95.8
Yes	2	4.2
Deep infection:		
No	46	95.8
Yes	2	4.2
Shortening:		
No shortening	43	89.6
Yes 1-2 cm*	5	10.4
Mal-union:		
No	38	79.2
Yes	10	20.8
Delayed:		
No	43	89.6
Yes	5	10.4
Deep vein thrombosis:		
No	44	91.6
Yes	4	8.4
Pulmonary thrombosis:		
No	46	95.8
Yes	2	4.2

*Cm = centimeter

Figure 3: Distribution of complications of intertrochanteric fractures



Discussion

The dynamic hip screw, which provides rigid fixation and allows early mobilization as it enables optimal collapse and compression of the fracture site [7], is the most common extramedullary device used for intertrochanteric fractures and has reasonable results [16,17].

The treatment for intertrochanteric fractures has evolved significantly over the last few decades. Several methods were introduced for fixation for fractures. Among all DHS could be considered as the gold standard for fixation of intertrochanteric fractures [18].

Since 1951, when the Polish physician Ernst Pohl first demonstrated the use of the classic form of DHS for the treatment of femoral fractures, DHS has been considered to be the ideal treatment option for extra-medullary fixation of the intertrochanteric fracture [19].

DHS provides continuous dynamic pressure to promote bone union and thus reduces the occurrence of nonunion. However, the unlimited dynamic pressure tends to cause complications and treatment failure [20]. It has been reported that when screw sliding exceeds 15 mm, it is considered a treatment failure [21].

In our current study we found out of the total study patients, 29 patients were females (60.4%) and 19 patients (39.6%) were males and the mean age was 75.1±7.4 years. The mean age of male patients was 76.4 ± 6.9 years while for females was 74.2±7.7 years. The age ranged between 62 to 90 years.

Kani et al [22] mentioned in their study that intertrochanteric fractures occur both in the elderly and the young, but they are more common in the elderly population with osteoporosis due to a low energy mechanism. The female to male ration is between 2:1 and 8:1. These patients are also typically older than patients who suffer femoral neck fractures.

Our finding is similar to the finding in a study conducted in Egypt by Rashad et al [23] who found 50 patients with intertrochanteric fractures of femur where 37 (74%) were females and 13 (26%) were males; all of them were above 60 years old ranging from 60 - 75 years old. Our study also correlates with White and colleagues' [24] study where average age was 75.4 years.

In this study, mechanisms of injury were simple fall (slipping) in most of cases 38 (79.1%) patients, fall on stairs 7 (14.6%) patients and Road Traffic Accident (RTA) in 3 (6.3%) patients. There was no statistical relation between causes of injuries and sex ($p > 0.05$).

A study in Egypt [23] reported that mechanisms of injury were simple fall in most of the cases 34 (68%), fall on stairs 12 (24%) patients and Road Traffic Accident in 4 (8%) patients.

In our study we found 28 (58.3%) of intertrochanteric fractures were in the right side and 20 (41.7%) were in the left side. This finding was in agreement with that reported by Rashad et al [23] who found 29 patients (58%) were in the right side and 21 patients (42%) were in the left side. We found in our study the stable fractures were 25 (52.1%) while unstable fractures were 23 (47.9%). Intertrochanteric

fractures are classified as stable and unstable fractures according to the fracture fragment and direction of the fracture line [3].

A stable intertrochanteric fracture is a two-part fracture with a fracture line along the trochanter line, whereas an unstable intertrochanteric fracture is one where comminution of the posteromedial buttress exceeds a trochanteric fragment or where the fracture lines are within the subtrochanter [4].

Four cases developed wound infection, 2 (4.2%) of them were superficial stitch abscess and 2 (4.2%) were deep infection. The treatment protocol for superficial infection was continuation of antibiotics and daily dressing. The two cases of deep infection were treated with thorough irrigation, excision of slough and debridement of infective material with continuation of antibiotics sensitive to the organism.

Puram et al [25] found in their study 7 (6.7%) complications, one superficial infection (1%), one deep vein thrombosis (1%), and one (1%) deep infection.

We found also, in our study shortening of 1-2cm occurred in 5 (10.4%) patients, none of them had any functional deficit. It has been demonstrated that proximal femoral shortening is affected by multiple factors after surgical treatment for femoral intertrochanteric fractures. In particular, the degree of tip-apex distance (TAD) and the fracture aspect have been suggested to be significant risk factors [26].

In a study [27] from Koria, 7 patients had TAD exceeding 25 mm; among them, 6 were further categorized into the high-risk group (>10%) of femoral offset shortening.

In the current study mal-union occurred in 10 (20.8%) cases. Delayed union occurred in 5 (10.4%) cases. Active physiotherapy was given regularly for delayed union.

Huang et al [20] reported that DHS provides continuous dynamic pressure to promote bone union and thus reduces the occurrence of nonunion. It has been reported that when screw sliding exceeds 15 mm, it is considered a treatment failure [21].

To deal with these clinical problems, Limited Dynamic Hip Screw (LDHS) preserves the feature of the traditional dynamic screw by keeping the screw sliding cavity, which not only maintains the dynamic pressure to facilitate bone union, but also prevents the main screw from unlimited outside sliding. These modifications effectively limit the main screw sliding and reduce the complications of DHS [28].

For a femoral intertrochanteric fracture, many devices can result in stable fixation and achieve union [29,30,31]. The advantage of the DHS was interfragmental compression effect with a high union rate [12].

In our study, we found deep vein thrombosis developed in 4 (8.4%) cases and pulmonary thrombosis occurred in 2 (4.2%) cases.

Laohapoonrungsee et al [32] reported in their study from Thailand, there were no cases of deep vein thrombosis. The incidence of post-operative deep vein thrombosis in Asia was reported much lower than the western population [33].

Venous thrombosis is a substantial cause of morbidity and mortality in patients following hip fracture [34].

Asymptomatic deep vein thrombosis (DVT) has been reported in up to 50% of all patients who sustain a hip fracture, with an incidence of fatal pulmonary embolus (PE) of up to 10%. The incidence of asymptomatic thrombi will always be markedly higher than those that are clinically apparent [34,35].

Conclusion

As a result of our experience we found that the dynamic hip screw is a modality of choice in patients with intertrochanteric fracture; it is effective, simple, and safe. Further studies are needed to compare between our modality and other modalities.

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Essentials to prevent and live with COVID-19: An Explanatory Mixed Method Study at Bisha, Kingdom of Saudi Arabia

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Received: July 2021; Accepted: August 2021; Published: September 1, 2021.
Citation: Muffarah Hamid Alharthi. Essentials to prevent and live with COVID-19: An Explanatory Mixed Method Study at Bisha, Kingdom of Saudi Arabia..World Family Medicine. 2021; 19(9): 39-51 DOI: 10.5742/MEWFM.2021.94123

Abstract

Background: The COVID-19 outbreak was declared a pandemic in early 2020. Since then, the world has been facing repeated waves of the COVID-19 pandemic. Although the vaccine against COVID-19 has been in action since December 2020, the time testing, effective coverage, and cross-immunity against various antigenicity are waiting for answers.

Aim of Study: To determine the knowledge and understanding of the concepts of social distancing and personal protective equipment (PPE), and its adherence among the owners and managers of supermarkets and major shops, which could be the main places for community acquired infection in Bisha City, Kingdom of Saudi Arabia (KSA), during the COVID-19 Pandemic.

Methods: An explanatory mixed method study was conducted among 45 participants (owners, managers and supervisors of super-markets and major shops) along with a qualitative technique Key Informant Interview that was carried out among 9 purposively selected managers and supervisors to further explore the factors influencing adherence to social distancing and PPE use in Bisha City, KSA. Demographic profile, knowledge, attitude and adherence on social distancing and appropriate PPE use were elicited by questionnaire. Several themes emerged with the Key Informant in-depth interview.

Results: The action taken by the government to provide education on COVID-19 has reached the people evenly and equally. Owners were less understanding than other cadres on social distancing and use of PPE. There was a significant correlation between participants' knowledge and their adherence level. The in-depth interviews revealed remarkable outcomes with several facilitating and hindering factors on social distancing and use of PPE.

Conclusions: Actions taken by the government to provide education regarding COVID-19 spread and prevention have reached the target population evenly and equally. However, there is chance for improvement to prevent cross infection in the community work-place settings with stringent implementation of the norms of social distancing and scientific use of PPE.

Key Words: COVID-19, Social Distancing, PPE Use, Explanatory mixed method, Qualitative technique, Key Informant Interview

Introduction

Since 2020, the world has been facing repeated waves of COVID-19 pandemic, and the COVID-19 outbreak was declared a pandemic, [1] in which a coronavirus has been identified as the cause of an outbreak of a respiratory illness. It was first detected in Wuhan, China [2]. As of August 10th, 2021, almost 205 million confirmed cases of COVID-19, including more than 4 million deaths have been reported globally. Many accomplishments on COVID-19, including virus information, clinical features, and diagnosis, have been achieved. However, no effective treatment is available yet [3].

Although the vaccines against COVID-19 have been in action since December 2020, time testing, effective coverage, and cross-immunity against various antigenicity of the same virus are still waiting for clear answers.

To curb the spread of the virus, governments have enacted policies aimed at regulating peoples' behavior and social habits. In particular, citizens across the globe are intensely encouraged to engage in "social distancing" (also referred to as "physical distancing") [4 – 6]. A recent rapid review of the psychological impact of quarantine found that longer quarantine duration, infection fears, frustration and boredom, inadequate supplies, inadequate information, financial loss and stigma were among the major stressors for the general public [7].

Social distancing is an effective means for containing the spread of COVID-19 [8]. However, notable variation is observed, suggesting that some individuals are far less compliant than others. [9].

Personal Protective Equipment (PPE) is the clothing or equipment designed to protect workers from physical hazards at the worksite. Attempts to control workplace risks and hazards should always be addressed first [10]. PPE Safety checklists are necessary by safety officials and supervisors to help identify tasks that require a particular type of PPE to ensure that staff are using the right equipment to reduce overall harm from COVID-19 exposure. The fundamental principle is that PPE should only be used as a last resort, and collective protective measures covering numbers of employees in a workplace must have priority over protective measures applying to individual employees. However, theoretical levels of protection considering PPE are seldom reached in practice. Some studies indicate that the psychological effect of PPE may be such that the individual wearing the PPE feels more protected than he/she actually is [11].

In addition, special care should be taken where persons suffer from certain medical conditions, e.g. certain types of respiratory protective equipment (RPE), may not be suitable for employees with asthma, bronchitis or heart disease. Where situations such as these occur, the employer should seek medical advice as to whether the employee can tolerate the use of PPE [11].

As the world is facing the COVID-19 pandemic, where the real time definitive treatment still remains a hope, and primary prevention with an effective-time-tested vaccine is still in the process of establishing solid evidence-based conclusions, the mainstay to combat the disease is grounded in the knowledge and understanding about the disease and attitude toward a conscious and focused behavior by the general population to live with COVID-19 pandemic without getting infected. Therefore, the main focus will remain on prevention of such respiratory diseases' pandemics in the present and future with social distancing and appropriate use of PPE [11].

Thus, the aim of this study was to determine the knowledge and understanding of the concepts of social distancing and PPE, and adherence of owners and managers of supermarkets and major shops (which could be the main places for community-acquired infection) in Bisha City, KSA, during the COVID-19 pandemic.

Subjects and methods

During the period from October 2020 to December 2020, owners, managers and supervisors of super-markets, departmental stores and shops in Bisha City, KSA, were interviewed by the researcher, using a validated and structured questionnaire, which covered participants' demographic profile, knowledge, attitude and adherence to social distancing and appropriate PPE use. Moreover, in-depth interviews were done among the key informants to further explore the factors influencing their adherence to social distancing and PPE use during the COVID-19 pandemic.

Study Design

An explanatory mixed research method was followed. A qualitative technique, key informant interview was done among nine purposively selected managers and supervisors to further explore the factors influencing adherence to social distancing and PPE use.

Study Area

The study area was Bisha, a city within Aseer Region, situated in the south-western part of Saudi Arabia. The Health services are administered under the supervision of Aseer General Directorate of Health.

Study Population

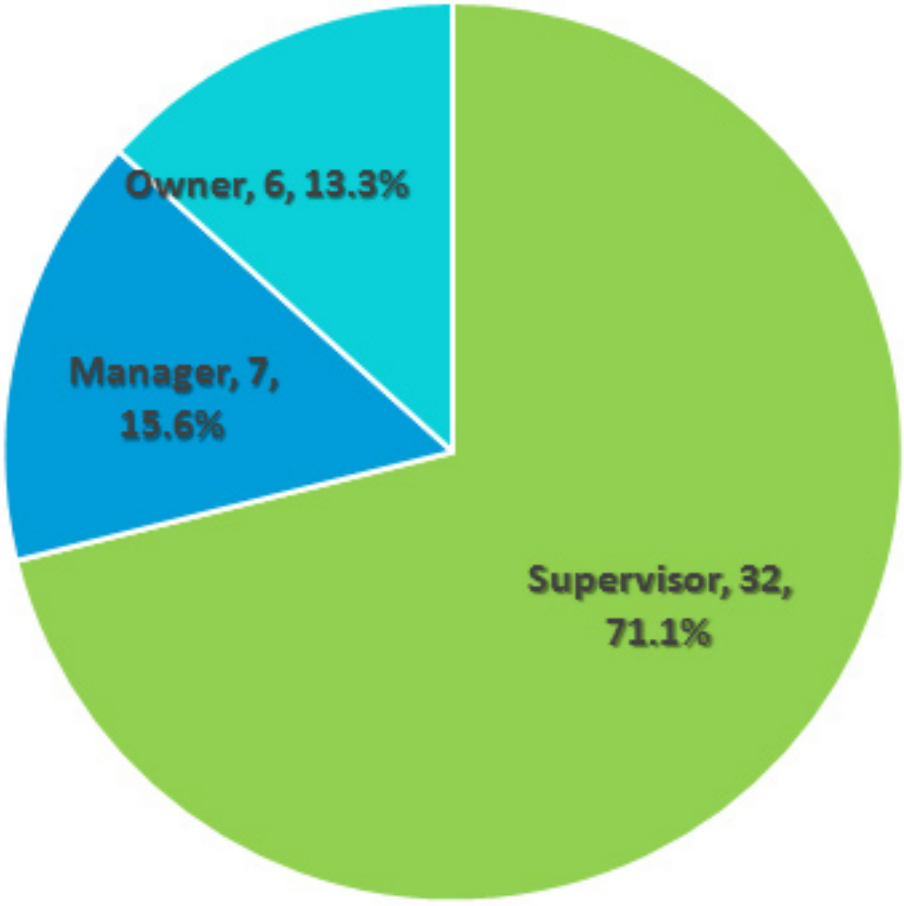
Figure 1 shows that the total population of eligible participants (i.e., owners, managers and supervisors of supermarkets, departmental stores, and major shops in Bisha City, KSA) are 283.

Sample size

A total of 48 participants were selected by a purposive sampling technique, among whom 45 agreed to take part in the study. Participants were selected from the shops and markets by cluster sampling technique from all the major markets, shops, and stores. Figure (2) shows that 32 participants (71.1%) were supervisors, 7 (15.6%) were managers and 6 (13.3%) were owners of various markets and shops.

Figure 1: Total number of owners, managers and supervisors of supermarkets, departmental stores, and major shops in Bisha City, KSA

Figure 2: Percentage of participants' positions



Data Collection
A qualitative technique key informant interview was done with 9 purposively selected managers and supervisors. Several themes emerged during the key informant in-depth interview.

Data Analysis
The collected data were primarily analysed using Mann-Whitney and Kruskal-Wallis Tests. Spearman's rank correlation coefficient was used to assess the association between knowledge, understanding and adherence to social distancing and appropriate PPE use. The statistical analysis was done using the Statistical Package for Social Sciences (IBM, SPSS version 23).

Results

Table (1) shows that most participants (26.7%) belonged to clothes stores, while 2.2% worked at watch shops, and others worked at dessert shops, gold shops, mobile stores, supermarkets, house stuff stores, perfume shops, cafés and restaurants. Age of most participants (80%) was 18 – 35 years, 93.3% lived in urban areas and 71.1% belonged to the supervisory job cadre. The educational level of participants ranged from intermediate (2.2%) to secondary (48.9%) and university graduates (48.9%). Almost all participants (91.1%) did not have any chronic diseases. The monthly family income ranged from less than 3,000 SAR (42.2%) to 10,000-15000 SAR (8.9%). Only two participants (4.4%) stated that they know someone who has been infected with COVID-19.

Table 1: Characteristics of study sample

Demographic variables		No.	%
Types of Shop	Dessert shops	3	6.7
	Gold shops	2	4.4
	Clothes stores	12	26.7
	Mobile stores	7	15.6
	Super Market	6	13.3
	House stuff stores	7	15.6
	Perfume Shops	3	6.7
	Café & Restaurant	4	8.9
	Watch shops	1	2.2
Age (in years)	18 – 25	14	31.1
	26 – 35	22	48.9
	36 – 45	5	11.1
	46 – 55	4	8.9
Residence	Urban	42	93.3
	Rural	3	6.7
Marital status	Single	18	40
	Married	27	60
Job type	Supervisor	32	71.1
	Owner	6	13.3
	Manager	7	15.6
Educational Level	Intermediate	1	2.2
	Secondary	22	48.9
	University	22	48.9
Monthly income (SAR)	< 3000	19	42.2
	3000 – 4999	15	33.3
	5000 – 9999	7	15.6
	10,000 - 15000	4	8.9
Chronic Disease	Yes	4	91.1
	No	41	9.9
Types of Chronic Disease	Nil	41	91.1
	Hypertension	1	2.2
	Asthma	2	4.4
	Rheumatoid Arthritis	1	2.2
Knows anyone infected with COVID-19	Yes	2	4.4
	No	43	95.6

Table 2 shows that none of the participants' demographic variables is significantly associated with their knowledge on spread of COVID-19 and its prevention, i.e., importance of social distancing and appropriate use of PPE.

Table 2: Participants' knowledge according to their personal characteristics

Participants' personal characteristics		No.	Knowledge score			Mean Rank	P value‡
			Mean	Median	IQR		
Type of shop	Dessert shops	3	11.33	11	6-11	21.67	0.854
	Gold shops	2	11	11	7-8	23.5	
	Clothes stores	12	11.17	11	6.5-9	24.25	
	Mobile stores	7	10.71	11	6-8	17	
	Super Market	6	11.5	11	7-9	29	
	House stuff stores	7	11.43	11	7-8	21.57	
	Perfume Shops	3	11.33	11	7-8	21	
	Café & Restaurant	4	11.5	12	7.5-8	27.25	
	Watch shops	1	15	15	7-7	16	
Age (in years)	18 – 25	14	11	11	7-8	20.36	0.207
	26 – 35	22	11.5	11	7-9	26.82	
	36 – 45	5	11.4	11	6-7	15.5	
	46 – 55	4	11.25	11	6.5-8	20.62	
Job cadre	Supervisor	32	11.38	11	7-8	24.41	0.217
	Owner	6	11	11	6-7	14.67	
	Manager	7	11.29	11	7-8	23.71	
Educational level	Intermediate	1	10	10	7-7	16	0.163
	Secondary	22	11.05	11	7-8	19.7	
	University	22	11.64	11	7-9	26.61	
Monthly income (SAR)	< 3000	19	11.53	11	7-9	24.84	0.728
	3000 – 4999	15	11	11	7-8	20.07	
	5000 – 9999	7	11.14	11	7-8	24.36	
	10,000 - 15000	4	11.75	11.5	6.5-8.5	22.88	
Chronic Disease	None	41	11.34	11	7-8	23.23	0.349
	Hypertension	1	12	12	6-6	4.5	
	Asthma	2	10.5	10.5	8-8	31	
	Rheumatoid arthritis	1	11	11	7-7	16	
Residence	Urban	42	11.31	11	7-8	22.79	0.715
	Rural	3	11.33	11	7-8	26	
Marital Status	Single	18	11.17	11	7-9	25.72	0.236
	Married	27	11.41	11	7-8	21.19	
Chronic Disease	Yes	4	11	11	6.5-8	20.62	0.715
	No	41	11.34	11	7-8	23.23	
Knows one with COVID-19	Yes	2	12.5	12.5	7-7	16	0.485
	No	43	11.26	11	7, 8	23.33	

IQR: Interquartile range ‡Mann-Whitney test

Table 3 shows that job cadre was significantly associated with participants' knowledge score about importance of social distancing and use of PPE. Other demographic variables were not significantly associated with their understanding of social distance and use of PPE.

Table 3: Association between Knowledge of COVID-19 Prevention and Control and demographic profile

Participants' Particulars		No.	Knowledge score			Mean Rank	P value‡
			Mean	Median	IQR		
Type of Shop	Dessert Shops	3	11.33	11	12-14	26	0.147
	Gold Shops	2	11	11	13-14	34	
	Clothes Stores	12	11.17	11	11.5-14	24.54	
	Mobile Stores	7	10.71	11	10-12	12	
	Super Market	6	11.5	11	11-14	23.58	
	House Stuff Stores	7	11.43	11	13-14	28.21	
	Perfume Shops	3	11.33	11	11-14	26.5	
	Café & Restaurant	4	11.5	12	8.5-12.5	13.25	
	Watch Shops	1	15	15	14-14	39	
Age (in years)	18 – 25	14	11	11	10-13	19.64	0.576
	26 – 35	22	11.5	11	12-14	25.59	
	36 – 45	5	11.4	11	9-13	20.8	
	46 – 55	4	11.25	11	10-14	23.25	
Job Cadre	Supervisor	32	11.38	11	11-14	22.84	0.035†
	Owner	6	11	11	10-12	13.42	
	Manager	7	11.29	11	13-14	31.93	
Educational Level	Intermediate	1	10	10	13-13	29	0.603
	Secondary	22	11.05	11	11-13	21.14	
	University	22	11.64	11	11-14	24.59	
Monthly income (SAR)	< 3000	19	11.53	11	10-14	21.45	0.718
	3000 – 4999	15	11	11	11-14	26.1	
	5000 – 9999	7	11.14	11	11-13	22.07	
	10,000 – 15000	4	11.75	11.5	10.5-13	20.38	
Chronic Disease	None	41	11.34	11	11-14	23.84	0.534
	Hypertension	1	12	12	12-12	19.5	
	Asthma	2	10.5	10.5	10-12	13.25	
	Rheumatoid arthritis	1	11	11	11-11	11.5	
Residence	Urban	42	11.31	11	11-14	23.21	0.715
	Rural	3	11.33	11	11-13	20	
Marital Status	Single	18	11.17	11	11-13	22.39	0.795
	Married	27	11.41	11	11-14	23.41	
Chronic Disease	Yes	4	11	11	10.5-12	14.38	0.175
	No	41	11.34	11	11-14	23.84	
Knows one infected with COVID-19	Yes	2	12.5	12.5	13-14	34	0.267
	No	43	11.26	11	11-14	22.49	

IQR: Interquartile range ‡Mann-Whitney test † statistically significant ($p<0.05$)

Table 4 shows that none of the demographic variables were significantly associated with their adherence to social distancing and use of PPE. It depicts that despite categorical types of variations in the demographic characters the participants understand the importance of adherence to social distancing and use of PPE.

Table 4: Association between Understanding and demographic profile

Personal characteristics		No.	Knowledge score			Mean Rank	P value‡
			Mean	Median	IQR		
Type of Shop	Dessert shops	3	11.33	11	17-23	17.33	0.931
	Gold shops	2	11	11	20-23	24.25	
	Clothes stores	12	11.17	11	20-22	21.38	
	Mobile stores	7	10.71	11	18-23	22.5	
	Super Market	6	11.5	11	20-22	21.08	
	House stuff stores	7	11.43	11	20-24	26	
	Perfume Shops	3	11.33	11	22-23	32.5	
	Café & Restaurant	4	11.5	12	18-23.5	21.75	
	Watch shops	1	15	15	22-22	27.5	
Age (in years)	18 – 25	14	11	11	18-23	19	0.464
	26 – 35	22	11.5	11	20-23	25.8	
	36 – 45	5	11.4	11	19-23	24.1	
	46 – 55	4	11.25	11	20-22	20.25	
Job cadre	Supervisor	32	11.38	11	20-23	23.75	0.355
	Owner	6	11	11	18-23	16.08	
	Manager	7	11.29	11	20-23	25.5	
Educational Level	Intermediate	1	10	10	23-23	35	0.642
	Secondary	22	11.05	11	19-24	22.5	
	University	22	11.64	11	20-22	22.95	
Monthly income (SAR)	< 3000	19	11.53	11	20-22	22.08	0.769
	3000 – 4999	15	11	11	20-23	21.53	
	5000 – 9999	7	11.14	11	20-24	26.79	
	10,000 - 15000	4	11.75	11.5	19.5-24	26.25	
Chronic Disease	None	41	11.34	11	20-23	23.95	0.381
	Hypertension	1	12	12	18-18	5	
	Asthma	2	10.5	10.5	20-21	17.25	
	Rheumatoid arthritis	1	11	11	20-20	13.5	
Residence	Urban	42	11.31	11	20-23	22.48	0.344
	Rural	3	11.33	11	21-23	30.33	
Marital Status	Single	18	11.17	11	20-23	23.25	0.916
	Married	27	11.41	11	20-23	22.83	
Chronic Disease	Yes	4	11	11	19-20.5	13.25	0.128
	No	41	11.34	11	20-23	23.95	
Knows one with COVID-19	Yes	2	12.5	12.5	22-25	35.75	0.182
	No	43	11.26	11	20-23	22.41	

IQR: Interquartile range ‡Mann-Whitney test

Table 5 shows that there is a significant correlation between knowledge and their adherence level of social distancing and use of PPE which is an obvious reason for the Kingdom of Saudi Arabia being listed in number 24th among the world's highest contributors in COVID-19 cases.

Table 5 : Correlation matrix between adherence to norms and policies and participants' knowledge, understanding and adherence

Spearman's rho		Knows	Understands	Adheres
Knows	Correlation Coefficient	1		
	p-value	.		
Understands	Correlation Coefficient	0.046	1	
	p-value	0.767	.	
Adheres	Correlation Coefficient	0.305	0.226	1
	p-value	0.042†	0.136	.

† Statistically significant (p<0.05)

Themes that Emerged from Key Informants In-Depth Interview (Figure 3)

The in-depth interview on social distancing and PPE use among nine purposively selected study participants revealed several outcomes. Most participants had knowledge about the essentials of social distancing and appropriate use of PPE. The Facilitating factors for social distancing mentioned were "personal motivation", "adequate knowledge" about the fact, "availability of space" to arrange for social distancing and "enforcement by law and order". While some hindering factors which came out in the interview session were: "Lack of adequate space" counterfeiting the need of general population for essential commodities to provide for social distancing, "gap in knowledge" and "careless attitude" (from less than 10% of the participants). Similarly, of that for appropriate use of PPE among the study participants brought out that the facilitating factors were "no dearth of resources", "personal motivation" to use PPE, "adequate knowledge" and "legal enforcement". While the hindering factors were "knowledge Gap" and "Herd mentality" (adopting behavior as other people around them).

Example from the theme of social distancing facilitating factors:

Personal Motivation - "I need to take care of my family, so I have to be healthy, work and earn for my family. The same applies for my friends too so I use to pass on all the required knowledge and updates about COVID0-19 to all my close friends. We need to pass this phase of curse, we have to win against Corona" [from a 34 year old male manager of a supermarket]

Adequate knowledge – "We get all the information and updates from television, newspapers and messages, although it is frustrating to be cautious all the time but this information and knowledge can only help us protecting ourselves from the disease. Hoping to hear the invention of treatment of this disease soon" [a 28 year old male, supervisor of a clothes store].

Example from the Theme of Social Distancing hindering factors:

Less Availability of space: "the space inside and outside our store is not that much to maintain the norms of social distancing among the customers, we can't help it, we have to run our business too, and also we can't disappoint our customers" [a 48 years old gold shop owner].

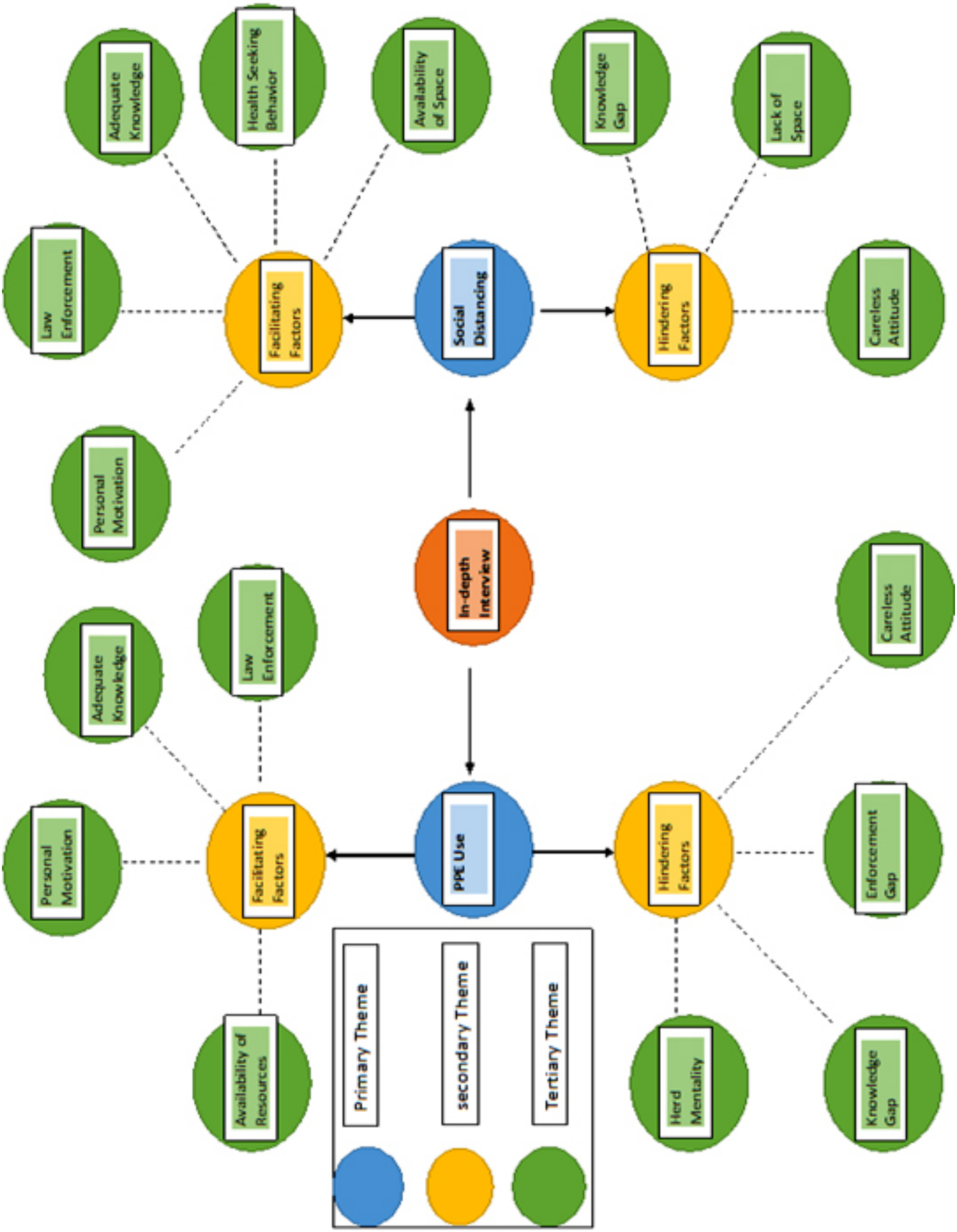
Example from the Theme of PPE use facilitating factors:

Law enforcement – "we human beings tend to make mistakes and be unmindful, the enforcement of monitory fines and other punishment for non-adherence to the use of mask in public place is a very essential step by government" [from a 35 year old manager in a large super market].

Example from the Theme of PPE use hindering factors:

Careless Attitude – "it has been so long and so stressful throughout, I really think the disease has got nothing to do with use of masks and other things, I have not been using it most of the time and neither I got the disease. The disease will go away by itself, it's all useless things" [from a 24 year old supervisor in a Perfume shop].

Figure 3: Themes that emerged from in-depth interview



Discussion

An important function of shops and markets is to support customer-care, including handling and delivering of items, especially in the billing and delivery areas. This may increase the risk of community acquired infections similar to that of nosocomial infections. In such scenarios, the rate of transmission will be significantly increased [12].

Existing research on social distancing and isolation highlighted several challenges for public health policymakers, including lack of trust in the government, and concerns over strains on family resources [13]. Nevertheless, the present study showed that none of participants' personal characteristics was significantly associated with their knowledge about COVID-19 spread and its prevention. Only the section of job cadre was significantly associated with understanding score about the importance of social distancing and use of PPE, i.e., owners are less understanding than those with other cadres (i.e., supervisors and managers).

Moreover, this study showed that none of participants' demographic variables were significantly associated with their compliance to social distancing and wearing PPE. It depicts that despite categorical types of variations in the demographic characteristics, the participants understand the importance of adherence to social distancing and use of PPE. Although Moore et al. argued that, based on past epidemics, the effects of demographic variables is quite likely [14].

It is to be noted that, there is not much published qualitative evidence on public's perceptions and experiences of social distancing and social isolation, appropriate use of PPE and its relation to adherence – a gap that the present study addresses. A Stanford-led study [15] found that almost 4 out of 10 Americans were not complying with social distancing recommendations.

Although the most common reason for not following orders was work requirements for nonessential industries, other reasons included worries about mental and physical well-being, the belief that other precautions, such as hand-washing, are sufficient, a wish to continue everyday activities, and the belief that society is overreacting. These findings are in accordance with that reported by a Gallup Poll [16]. Moreover, Pedersen et al. noted that respondents generally expressed an intention to engage in strict social distancing. On a scale ranging from 0 to 100, where 0 indicates "no intention to socially distance" and 100 indicates "maximum social distancing," the average response was 87.8 [17].

The present study found a significant correlation between participants' knowledge and their adherence level to social distancing and use of PPE. This may reflect why The Kingdom of Saudi Arabia occupies the 42nd position on the list of Worldometer as regard the world's highest contributor during 2020-21 regarding spread of COVID-19 cases [18].

Based on the findings of the present study, there are several observations and suggestions.

Having minimum possible staff manageable per shift is preferred: For a given overall number of staff accessible to work in the markets and shops (staff pool), it is preferable to organize a smaller number of staff/workers per shift than a larger one. This may require the consolidation of certain function or sections. Having less staff at work reduces the opportunity of cross infection. If there is excess manpower, clerical and accounting staff can work from home given special facilities to meet the need.

Frequent staff change is preferred: Increasing the frequency of shift change by having staff work less hours per day (i.e., increasing the number of shifts per day). This will ensure reducing of staff contact.

It is important to monitor the health of the staff: This can be achieved by using temperature monitoring or asking the staff to self-report symptoms or illness, as recommended in the International Federation of Clinical Chemistry (IFCC), especially those most frequently associated with the initial stage of COVID-19 (cough, myalgia, headache, loss of smell and taste, gastrointestinal disturbances) [19]. Therefore, splitting the staff into mutually exclusive teams has similar effects as having a smaller number of staff working per shift. It limits the risk of workplace transmission to a smaller subgroup. However, split team arrangement often requires a larger buffer of manpower which is again an issue of resources and money to be considered.

Moreover, as regards the PPE, the WHO stated that the N95 face mask confers the highest protection against workplace transmission, but it is not often used/or available in the market/supply during the current COVID-19 pandemic. This is followed by gown, surgical masks, and gloves. Provision of all those PPE to the workers even though not in the hospital setting can definitely enhance the quality of disease prevention and transmission, but resource is again an issue to be thought and considered by the management of the shops and government [20].

The Billing and Delivery Section (BDS) is a very important section of most departmental stores or supermarkets or hypermarkets. Figure (4) describes how social distancing is maintained optimally or sub-optimally was in notable variation which become a potential area to liberate a chance of spreading infection. The distance between the consecutive customers forming the queue in the billing and delivery sections were as per norms and were monitored effectively though, in most of the departmental stores or supermarkets or hypermarkets, the counter of the billing did not have adequate distancing between the customers and the employees who handle the commodities for scanning and dispensing. This can be a potential site for community acquired infections due to cross handlings of items as well as sub-optimal social distancing. Most of the time it is also observed that the PPE, especially gloves, were not changed and disposed of frequently, as well there were no transparent screens between the customers

and the employers for prevention of the droplet infections transmission. This can be considered with stringent implementations of preventive measures in terms of strict and optimal social distancing and appropriate use of PPE [21].

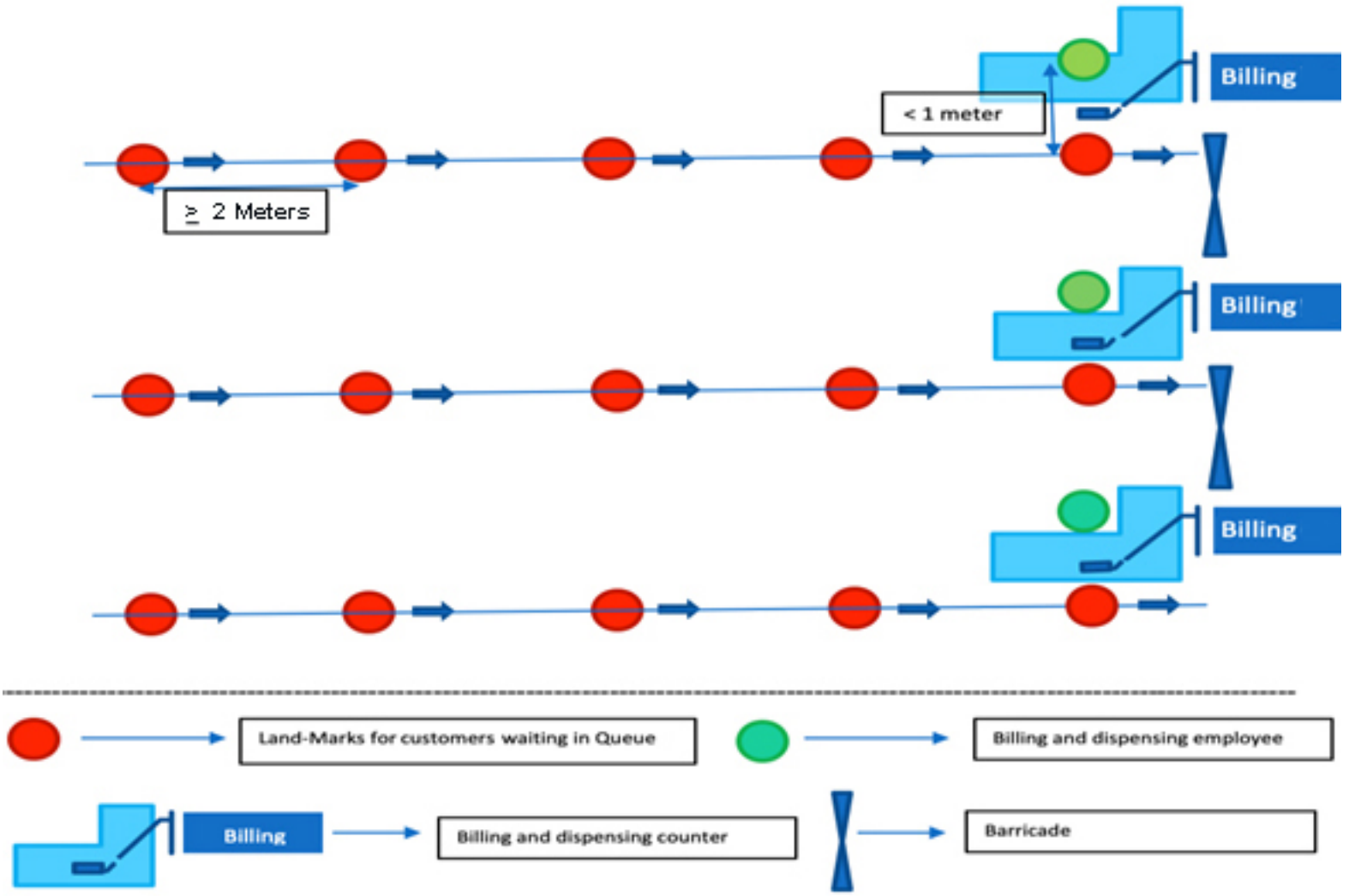
Study limitations

There are a few important limitations in this study. Because only owners, managers and supervisors were considered, the sample size couldn't have been more than 45. It considered only one state (work) for the staff. More states are expected to exist, for example, personal outing in the community, social gatherings, etc. Nevertheless, the risk of additional staff acquiring the infection from the community may be increased in communities where the infection is widespread, more for those with some important predisposing factors (i.e., age ≥40 years, male sex, overweight, chronic diseases, etc.) [12].

Conclusion

This study concludes that actions taken by the Saudi government to provide health education regarding COVID-19 spread and prevention have evenly reached the target population. However, there is still more chance for improvement to prevent cross-infections in the community and work-place settings with stringent implementation of the norms of social distancing and scientific use of PPE. Policy makers taking this into serious cognizance and acting upon it accordingly will prevent community transmission of any dreadful respiratory infection including COVID-19.

Figure 4



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Anxiety and Perceived Stress among Physicians Working at Cairo University Hospitals Amid COVID-19 Pandemic

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Received: July 2021; Accepted: August 2021; Published: September 1, 2021.
Citation: Eman E Ebrahim, Marwa M Ahmed, Dalia M Gaber, Heba G Elnahas. Anxiety and Perceived Stress among Physicians Working at Cairo University Hospitals Amid COVID-19 Pandemic. World Family Medicine. 2021; 19(9): 52-60
DOI: 10.5742/MEWFM.2021.94125

Abstract

Introduction: The COVID-19 pandemic has rapidly become a major worldwide health problem. Understanding the negative psychological sequalae on working physicians either front liners or not, can reserve psychological resilience for future disease outbreaks.

Aim of the study: to explore the degree of anxiety and perceived stress in junior and mid senior physicians working at Cairo University Hospitals amid the COVID 19 pandemic.

Methodology: This was an online based cross-sectional study done from April to May 2021. A total of 208 physicians working at Cairo University hospitals were asked to fill in Google forms including sociodemographic and clinical data beside two reliable tools to assess anxiety using the generalized anxiety disorder questionnaire (GAD) and perceived stress using the perceived stress scale (PSS). The individual domains and the total scores were calculated then compared with the different sociodemographic and clinical characteristics.

Results: Most of the participants were females (66.3%), single (66.8%), not previously infected with COVID-19 (63.5%) and not included in the care of COVID 19 patients (64.9%). The mean GAD total score was 8.99±5.58 with 57.7% of the participants suffering mild to moderate anxiety. The mean PSS score was 20.76±5.3 with 80.3% found to have moderate stress. Except for the relation between gender and perceived stress (p value= 0.003), and the relation between psychiatric illness and perceived stress (p value=0.026), there was no statistical significance between anxiety and perceived stress from one side and sociodemographic and clinical data from the other side.

Conclusion: Anxiety and perceived stress among physicians during the COVID-19 pandemic is considered high regardless of the different sociodemographic and clinical characteristics.

Key words: COVID-19 pandemic, anxiety, perceived stress, physicians

Introduction

Since first diagnosed in December 2019, the COVID-19 pandemic has rapidly become a major health problem, with the number of confirmed cases reaching about 188,655,968 worldwide including 4,067,517 deaths according to the World Health Organization (WHO) (1). Besides the well-established pulmonary affection in COVID-19, the virus also has renal (2), cardiovascular (3) neurological and psychological complications (4).

The possible relation between respiratory illness and psychiatric symptoms is not novel, but has been described in literature before; for example post influenza depression and anxiety has been reported in a series of 37 cases (5). Also new onset manic episodes were reported with Influenza infection in individuals with no previous history of mental illness (6). These dramatic psychological impacts are not only a possible sequela of being infected but it has been proven that the strict public health measures including self-isolation and physical distancing that were implemented worldwide to slow down the spread of the outbreak had a negative effect on psychological well-being (7). Healthcare workers (HCWs) especially who are participating in the management of patients with infectious diseases are at greater risk of suffering from psychological symptoms whether they get infected or not (8). Multiple factors are behind the higher susceptibility of HCWs to mental health derailment (9). The flooding numbers of cases, the tiring workload, scarcity of personal protection equipment and drugs, the intense media focus and stigmatization along with the overwhelming fear about the health of self, family, relatives and friends, all cause the mental burden on the HCWs (10). Research showed that HCWs at the time of epidemics have reported suffering from stress, anxiety, and depression with more susceptibility to long-term psychological impacts (11). The high infectivity, morbidity and potential fatality of COVID-19 adds to the previously mentioned factors and increases the sense of personal danger (12). Previous research on HCWs during the acute SARS outbreak, showed that 89% of the participants reported multiple psychological symptoms (13). Similarly, in a cross-sectional survey that included 1,257 HCWs involved with COVID-19 patients in different regions in China 50.4% suffered from depression, 44.6% had anxiety, 34.0% had insomnia, and 71.5% suffered from distress (9). Understanding the possible mental and psychological impacts of a public health emergency on the healthcare providers can help in implementing better management strategies towards upcoming disasters (14).

Aim of the study: was to explore the degree of anxiety and perceived stress among junior and mid senior physicians working at Cairo University Hospitals amid the COVID 19 pandemic.

Methodology

Study design and setting: This was a web based cross-sectional survey conducted during the COVID-19 pandemic in the period from April to May 2021. Junior and mid-senior physicians (House officers, residents, assistant lecturers and lecturers) working at Cairo University hospitals were included in the study.

Study tools

An anonymous self-administered Google form link was created. The form link was disseminated through the social media groups of junior and mid-senior physicians and their responses were collected until the calculated sample was achieved. It consisted of four parts:

- ***The sociodemographic and COVID-19 related data:*** this included gender, marital status, residence, past history of contracting COVID-19 disease and dealing with suspected COVID-19 patients
- ***Health related worries against COVID-19 disease (15):*** adapted from a questionnaire used to detect worries and psychological distress during COVID-19 infection. It consists of 3 questions. The answers to each question were on a 5-rank scale from 1 representing the minimum to 5 which is the maximum.
- The Generalized Anxiety Disorder questionnaire (GAD) ***(16):*** it consists of 7 questions describing the personal feelings within the past 2 weeks. The answers were on a 4-rank scale ranging from not at all sure to nearly every day. The total score was calculated.
- ***The Perceived Stress Scale (PSS) (17):*** consists of 10 questions describing feelings and thoughts within the past 4 weeks. The answers to each question were on a 5-rank scale, ranging from never to very often. The total score was calculated.

All questionnaires were provided in one link on the Google form which was intended so that the answer to a question is a must to progress to the next one so all responses were complete without data loss. To avoid duplicate responses, the option of 'limit to one response' was activated in the form. The eligible participants were reminded to answer the form through social media groups every week.

Sample size estimation: Sample size was calculated using G-power version 3.1 software. Based on the levels of anxiety in HCWs reported in a study conducted by Sahebi et al 2021 (18), with 90% study power and 0.05 alpha error; the required sample size was 195 physicians to achieve the study objectives.

Statistical analysis:

The collected data were analyzed using SPSS program (Statistical Package for Social Science) version 22. Quantitative data were expressed as mean and standard deviation (SD) while qualitative data were represented in tables as frequencies and percentages. Student t test was used for comparing quantitative data. Chi-square test was used for qualitative data. It was considered statistically significant at P-value < 0.05.

Ethical consideration:
Approval was obtained from the research and ethical committee of Cairo University (Institutional review board (IRB): N-33-2021). The study was conducted according to the guidelines of the Declaration of Helsinki. The Google form included a written consent section that highlighted that submission of the questionnaire indicate their approval to share in the study. The collected data were confidential for the study purposes. The participants were informed that responding is voluntary and participation refusal is accepted without stating the reason.

Results

The current study was done to explore the degree of anxiety and perceived stress among physicians at Cairo university hospitals during COVID-19 pandemic. The total number of responders was 208 physicians. More than half of the studied group were females (66.3%), single (66.8%), living in Giza (47.6%) and Cairo (46.6%) and didn't suffer from any psychiatric illness prior (87.5%).

Regarding the participant's relation with COVID 19 infection, most of them (63.5%) haven't been infected with COVID 19 before. About (42.9%) of the infected participants were affected in the last 3 months, (96.2%) of them were treated at home and (92.4%) didn't receive corticosteroids in their treatment regimen. 64.9% of the infected participants weren't sharing in the management of COVID-19 patients.

As seen in Figure 1, 34.1% of the participants rated 3 on how much they became worried that the infection will affect themselves, 59.6% rated 5 on how much they became worried that the infection will affect one of their closest family members and 71.2% also rated 5 on how much they became worried that the infection will affect elderly members of their family.

Table 1 demonstrates the response of the study participants to Generalized Anxiety Disorder (GAD) screening questions; 41.3% of the participants felt nervous, anxious or on edge and, 35.1% are not able to stop or control worries for several days. 40.9% and 44.2% are worrying too much about different things and have trouble relaxing for several days respectively. Nearly half of the participants (40.9%) are so restless that it is hard to sit still, 42.3% are becoming easily annoyed or irritable and 33.2% feeling afraid as if something awful might happen for several days. The mean GAD total score was found to be 8.99±5.58 with 57.7% of the participants suffering mild to moderate anxiety.

Table 2 shows the response of the study participants to the Perceived Stress Scale (PSS). About 80.3% of the participants were found to have moderate stress, with more than half of them (56.7%) sometimes have been upset because of something that happened unexpectedly, 41.3% sometimes have felt that they were unable to control the important things in their life, 43.3% sometimes have felt nervous and stressed, 38.5% have sometimes felt confident about their ability to handle personal problems, more than half (52.4%) have sometimes felt that things were going their way, 41.8% have sometimes found that they could not cope with all the things that they had to do, 44.2% have sometimes been able to control irritations in their life, 47.6% have sometimes felt that they were on top of things, 39.4% have sometimes been angered because of things that happened that were outside of their control and 37% have sometimes felt difficulties were piling up so high that they could not overcome them.

Table 3 shows that there was a statistically significant relation between gender, psychiatric disease history and the perceived stress scale. While regarding anxiety there was no significant relation between the sociodemographic character, clinical history and the GAD total score.

Table 4 shows that there was a significant relation between how much the physician became worried that the infection will affect them and the PSS, but there was no significant relation between generalized anxiety disorder and the health-related worries of the physicians against COVID 19 infection.

Discussion

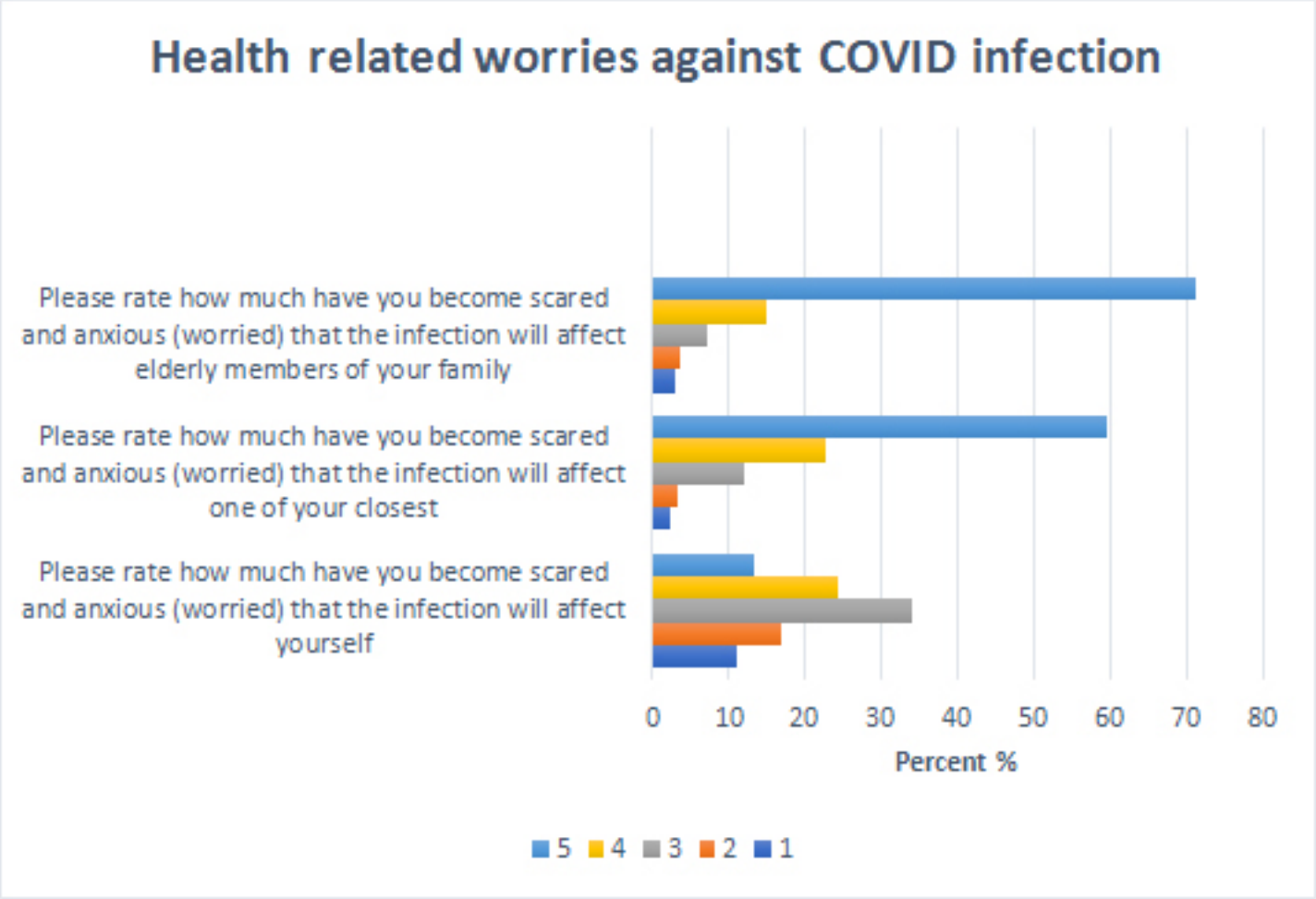
The current study investigated the negative effect caused by the pandemic of COVID 19 among working physicians regarding anxiety and perceived stress.

Our study results regarding the physicians' attitudes towards COVID-19 infection was consistent with the results of the work of Parajuli et al, 2020 (19) who studied the knowledge and attitude of 230 HCW at Seti Provincial hospital and found that the majority (87.8% and 60% respectively) agreed that HCWs and their family members are vulnerable to getting infected with COVID-19. The same was demonstrated by the results of Abolfotouh et al, 2020 (20) who surveyed 844 HCW in 3 tertiary hospitals in Saudi Arabia and found that most of HCW felt vulnerable about getting infected with Covid-19 at work and 69.1% would feel threatened if a colleague was infected with Covid-19.

The study results demonstrated that all of the participants suffered from GAD ranging from mild (27.9%) to severe form (14.4%) during COVID 19 pandemic. This is in line with the meta-analysis done by Adibi et al 2021 (21) who recruited 19 studies in his work and concluded that the prevalence of GAD in HCW during COVID-19 pandemic based on the GAD instrument was 32.04% (95% CI: 26.89–37.19, I2 = 98.2%, $p < 0.001$). This high GAD prevalence, among HCWs during the COVID-19 pandemic should draw the attention of the health system managers to monitor HCW for psychological problems and provide them with supportive measures if necessary.

Our results showed that about 80.3% of the participants were found to have moderate stress. These results are in line with Teshome et al, 2021 (22) who conducted his work on 798 HCW in Ethiopia and found that 61.8% (95% CI: 58.4%, 65.2%) of HCWs had perceived stress. All HCWs were similarly stressed by the current pandemic compared to the general population. Maintaining qualified HCWs who can provide guidance and emotional backing to junior colleagues is important. Psychological support for HCWs in the pandemic can be transformed into reserves of psychological pliability for future disease outbreaks.

Figure : Health related worries of the studied group against COVID infection



Except for the relation between gender and perceived stress (p value= 0.003) and the relation between psychiatric illness and perceived stress (p value= 0.026), our study showed that there was no statistical significance in the relation between anxiety and perceived stress from one side and the different sociodemographic and clinical characteristics on the other side. This is in line with Aly et al 2021 (23), who concluded from their study that the prevalence of mental health problems in the form of anxiety, stress and depression among HCW was high regardless of the sociodemographic characteristics.

Conclusion

Anxiety and perceived stress among physicians during the COVID-19 pandemic is considered high regardless of the different sociodemographic and clinical characteristics.

Table 1: Response of the studied group to Generalized Anxiety Disorder (GAD) questions

	Not at all	Several days	More than half the days	Nearly every day
	No. (%)	No. (%)	No. (%)	No. (%)
Feeling nervous, anxious or on edge	34 (16.3)	86 (41.3)	52 (25)	36 (17.3)
Not being able to stop or control worrying	63 (30.3)	73 (35.1)	46 (22.1)	26 (12.5)
Worrying too much about different things	29 (13.9)	85 (40.9)	55 (26.4)	39 (18.8)
Trouble relaxing	44 (21.2)	92 (44.2)	48 (23.1)	24 (11.5)
Being so restless that it is hard to sit still	85 (40.9)	68 (32.7)	35 (16.8)	20 (9.6)
Becoming easily annoyed or irritable	38 (18.3)	88 (42.3)	45 (21.6)	37 (17.8)
Feeling afraid as if something awful might happen	55 (26.4)	69 (33.2)	51 (24.5)	33 (15.9)
GAD grade	Minimal anxiety	Mild anxiety	Moderate anxiety	Severe anxiety
	No. (%)	No. (%)	No. (%)	No. (%)
	58 (27.9)	70 (33.7)	50 (24)	30 (14.4)
GAD Score: Mean±SD Range	8.99±5.58 (0-21)			

Table 2: Response of the studied group to the Perceived Stress Scale (PSS) questions

	Never	Almost Never	Sometimes	Fairly Often	Very Often
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Upset because of something happening unexpectedly?	18 (8.7)	26 (12.5)	118 (56.7)	31 (14.9)	15 (7.2)
Felt unable to control important things in your life?	18 (8.7)	37 (17.8)	86 (41.3)	44 (21.2)	23 (11.1)
Felt nervous and stressed?	8 (3.8)	20 (9.6)	90 (43.3)	50 (24)	40 (19.2)
Felt confident to handle your problems?	10(4.8)	44 (21.2)	80 (38.5)	55 (26.4)	19 (9.1)
Felt that things were going your way?	17(8.2)	36 (17.3)	109 (52.4)	35 (16.8)	11 (5.3)
Found that you could not cope with all the things that you had to do?	16(7.7)	44 (21.2)	87 (41.8)	44 (21.2)	17 (8.2)
Been able to control irritations in your life?	13(6.3)	45 (21.6)	92 (44.2)	46 (22.1)	12 (5.8)
Felt that you were on top of things?	22(10.6)	54 (26)	99 (47.6)	20 (9.6)	13 (6.3)
Been angered because of things that happened that were outside of your control?	13(6.3)	37 (17.8)	82 (39.4)	53 (25.5)	23 (11.1)
Felt difficulties were piling up so high that you could not overcome them?	26(12.5)	48 (23.1)	77 (37)	40 (19.2)	17 (8.2)
PSS grade	Low stress	Moderate stress		High stress	
	No. (%)	No. (%)		No. (%)	
	15 (7.2)	167 (80.3)		26 (12.5)	
PSS Score: Mean±SD Range	20.76±5.3 (8-39)				

Table 3: Relation between Generalized Anxiety Disorder (GAD), perceived stress scale (PSS) and basic sociodemographic characteristics, and clinical history:

Variables	GAD-7				p-value	PSS grade			P-value
	Minimal anxiety N=58	Mild anxiety N=70	Moderate anxiety N=50	Severe anxiety N=30		Low stress N=15	Moderate stress N=167	High stress N=26	
	No. (%)	No. (%)	No. (%)	No. (%)		No. (%)	No. (%)	No. (%)	
Gender: Male	25 (43.1)	17 (24.)	18 (36)	10 (33.7)	0.158	11 (73.3)	52 (31.1)	7 (26.9)	**0.003***
Female	33 (56.9)	53 (75.7)	32 (64)	20 (66.7)		4 (26.7)	115 (68.9)	19 (73.1)	
Marital status: Single	41 (70.7)	49 (70)	32 (64)	17 (56.7)	0.714	13 (86.7)	111 (66.5)	15 (57.7)	0.347
Married	16 (27.6)	20 (28.6)	18 (36)	12 (40)		2 (13.3)	53 (31.7)	11 (42.3)	
Widowed	1 (1.7)	1 (1.4)	0 (0)	1 (3.3)		0 (0)	3 (1.8)	0 (0)	
Residency: Giza	23 (39.7)	36 (51.4)	23 (46)	17 (56.7)	0.758	4 (26.7)	83 (49.7)	12 (46.2)	0.310
Cairo	32 (55.2)	30 (42.9)	24 (48)	11 (36.7)		10 (66.7)	76 (45.5)	11 (42.3)	
Outside Cairo	3 (5.2)	4 (5.7)	3 (6)	2 (6.7)		1 (6.7)	8 (4.8)	3 (11.5)	
History of psychiatric diseases: No	6 (10.3)	9 (12.9)	5 (10)	6 (20)	0.555	0 (0)	19 (11.4)	7 (26.9)	**0.026***
Yes	52 (89.7)	61 (87.1)	45 (90)	24 (80)		15 (100)	148 (88.6)	19 (73.1)	
Infected with COVID? Yes	24 (41.4)	23 (32.9)	20 (40)	9 (30)	0.613	5 (33.3)	60 (35.9)	11 (42.3)	0.792
No	34 (58.6)	47 (67.1)	30 (60)	21 (70)		10 (66.7)	107 (64.1	15 (57.7)	

Table 4: Relation between Generalized anxiety disorder (GAD-7), perceived stress scale (PSS) and the attitude toward COVID 19

Variables	GAD-7				P-value	PSS grade			P-value
	Minimal anxiety (N=58)	Mild anxiety (N=70)	Moderate anxiety (N=50)	Severe anxiety (N=30)		Low stress (N=15)	Moderate stress (N=167)	High stress (N=26)	
	No. (%)	No. (%)	No. (%)	No. (%)		No. (%)	No. (%)	No. (%)	
Rate worry the infection will affect yourself									0.056*
1	12 (20.7)	4 (5.7)	4 (8)	3 (10)		0 (0)	22 (13.2)	1 (3.8)	
2	14(24.1)	10(14.3)	5(10)	6 (20)	0.083	4(26.7)	25 (15)	6(23.1)	
3	18 (31)	27(38.6)	16 (32)	10(33.3)		2(13.3)	63 (37.3)	6 (23.1)	
4	11 (19)	18(25.7)	17 (34)	5 (16.7)		7(46.7)	34 (20.4)	10 (38.5)	
5	3 (5.2)	11(15.7)	8 (16)	6(20)		2(13.3)	23 (13.8)	3 (11.5)	
Rate worry the infection will affect your closest ones									0.923
1	2 (3.4)	0 (0)	1 (2)	2 (6.7)	0.072	0 (0)	4 (4.2)	1(3.8)	
2	5 (8.6)	2 (2.9)	0 (0)	0 (0)		1 (6.7)	5 (3)	1(3.8)	
3	11 (19)	8 (11.4)	3 (6)	3 (10)		3 (20)	20 (12)	2 (7.7)	
4	11 (19)	18(25.7)	14 (28)	4 (13.3)		4(26.7)	38 (22.8)	5 (19.2)	
5	29 (50)	42 (60)	32 (64)	21(70)		7(46.7)	100 (59.9)	17 (65.4)	
Rate worry the infection will affect family elderly									0.854
1	3(5.2)	0 (0)	1 (2)	2 (6.7)	0.164	0 (0)	5 (3)	1 (3.8)	
2	6 (10.3)	1 (1.4)	1 (2)	0 (0)		1 (6.7)	6 (3.6)	1 (3.8)	
3	4 (6.9)	4 (5.7)	4 (8)	3 (10)		1 (6.7)	10 (6)	4 (15.4)	
4	10 (17.2)	10(14.3)	6 (12)	5 (16.7)		2 (13.3)	26 (15.6)	3 (11.5)	
5	35 (60.3)	55(78.6)	38(76)	20(66.7)		11(73.3)	120(71.9)	17(65.4)	

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Semaglutide for the treatment of obesity – a review

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Received: August 2021; Accepted: August 2021; Published: September 1, 2021.
Citation: Abubakar Bham, Mohsin Allah Ditta. Semaglutide for the treatment of obesity – a review. World Family Medicine. 2021; 19(9): 61-64 DOI: 10.5742/MEWFM.2021.94116

Abstract

Increasing rates of obesity and its comorbidities continue to place a burden on individuals and health systems. Lifestyle interventions, although effective, are not always successful in long term management. The use of existing medicinal strategies, such as sibutramine and orlistat have not been very successful due to their own limitations. Semaglutide is a glucagon-like peptide-1 analogue that has been utilized in type 2 diabetes mellitus treatment. Its use in weight management has been recently explored in several studies. A review of literature can provide insight into whether semaglutide is a potential avenue for long term and sustainable weight loss. All studies reviewed identified that study participants on semaglutide experienced a significantly higher overall weight loss than placebo and most other comparison treatments. There were gastrointestinal adverse events recorded in most studies, but these did not seem to have an impact on the overall weight loss. Semaglutide provides a promising avenue for weight loss in obese and overweight individuals, although further research on management avenues for the GI events may ensure long term and sustained use.

Key words: semaglutide, obesity, weight loss

International rates of obesity have increased at an alarming rate in the last few decades. The World Health Organization (WHO) classifies an individual as overweight if they have a BMI of 25 or greater and as obese if their BMI is 30 or more (1). Between 1980 and 2013, prevalence of adults classified as overweight or obese increased by 27.5% (1). Comorbidities of obesity are numerous, with some of the most well-known including coronary heart disease, stroke, type 2 diabetes mellitus, and some cancers (2).

Treatment of obesity is best achieved through bariatric surgery, which is an invasive therapy for weight management (2). The leading non-invasive treatment is management of individual diet and behaviours (2). However, maintenance of weight loss using diet and behavioural changes is often challenging (3).

Medicinal strategies

Medicinal strategies for weight loss vary in modality and function. Sibutramine is a drug that has been shown to reduce bodyweight by inhibiting the reuptake of serotonin, noradrenaline, and some dopamine (4). This results in individuals reducing their food intake (4). The SCOUT trial conducted by James et al (2010) indicated a higher risk of cardiovascular events occurring in those who take sibutramine over a long period of time and who present with pre-existing cardiovascular conditions (5). Outcomes of this trial led to the suspension of the marketing authorisation for Sibutramine across Europe (6 and 7).

Orlistat is another medicinal strategy for weight loss, which works by reducing the digestion of triglycerides and reduces calorie absorption through faecal fat loss (4). However, long term persistence rates are very poor with high discontinuation rates (8).

Glucagon-like peptide-1 (GLP-1) is an incretin hormone responsible for nearly 70% of insulin secretion following the intake of food (9). For this reason, it was identified from the onset as an avenue of therapeutic interest in treating type 2 diabetes mellitus (9). However, its therapeutic use was limited due to its short half-life (9). The utilization of albumin binding increased its half-life and led to the development of liraglutide (taken once daily in type 2 diabetes mellitus and then semaglutide (taken once weekly), also for use in type 2 diabetes mellitus (9). Subsequently liraglutide obtained approval in Europe for use as an adjunct in weight management in obese patients and those with a BMI between 27-30 with weight related complications (10).

Recently, Semaglutide 2.4mg once weekly has gained approval in the USA as a treatment for obesity and in overweight patients with one associated weight related condition (11). A marketing authorisation from the European Medicines agency has also been sought by the manufacturers for approval of Semagltuide in management of obesity and overweight patients (12). The evidence for Semaglutide use in obesity is also under appraisal by the UK National Institute for Clinical Health and Excellence (NICE) (13).

Semaglutide mode of function

In order to understand the way semaglutide functions to reduce bodyweight, Blundell et al (2017) conducted a study (n=30) where they analyzed energy intake following dose-escalated subcutaneous injections of semaglutide. Participants were classified as obese (BMI of 30 to 45) and had not been diagnosed with type 1 or type 2 diabetes mellitus. There were two 12-week crossover treatment periods in this study and the treatment group was given escalating doses of semaglutide (0.25mg, 0.5mg, 1.0mg each for 4 weeks, ending with a last dose of 1.0mg at the end of the treatment period). Ad libitum energy intake was 35% lower in the semaglutide group compared to placebo, at lunch time. When observing all ad libitum meals and associated energy consumption, there was a 24% lower intake in the treatment group compared to placebo. Importantly, those who had been given semaglutide observed a mean body weight loss of 5kg compared to an increase by 1kg in the placebo group (14).

The authors also analyzed food preference using the Leeds Food Preference Task (LFPT), which can measure aspects of food preference and rewards. Results indicated that those in the semaglutide group had a reduced explicit liking for foods that were non-sweet and also high-fat (14). This study gives informed insight into the mechanism by which semaglutide functions, with an effect on energy intake leading to overall weight loss (14).

Semaglutide compared to liraglutide

While semaglutide is administered once weekly, its predecessor liraglutide is taken on a daily basis (9). A comparison of the two GLP-1 analogues in weight loss is useful in identifying the best modality. O'Neil et al (2018) conducted a study comparing the two which took place across 71 clinical sites situated in 8 different countries. Trial participants (n=957) were given varying doses of liraglutide, semaglutide, or placebo. All participants had a BMI of 30 or more and did not present with diabetes. Although liraglutide and semaglutide are both analogues of Glucagon-like peptide-1 (GLP-1), semaglutide is longer-acting. Following 52 weeks of treatment, results indicated a significant difference in weight loss when comparing the two treatment groups with placebo. There was also a significant difference in weight loss between semaglutide and liraglutide groups, with an increased weight loss observed at week 52 for those on doses of 0.1mg semaglutide or higher compared to participants given 3.0mg of liraglutide. While there was a higher reporting of gastrointestinal adverse events amongst treatment groups, 97% of these were classified as either mild or moderate (15).

Semaglutide and lifestyle changes

Studies have also been conducted where additional behavioural therapy has been added into the treatment regimen. The STEP 3 study by Wadden et al (2021) was carried out across 41 sites over 68 weeks (n=611) (16). Subjects were either overweight or obese and had not been diagnosed with type 2 diabetes mellitus. The treatment group was given 2.4mg semaglutide weekly in addition to a low-calorie diet for the initial 8 weeks, and intensive behavioural therapy throughout the length of the trial. The placebo group had the same, with the absence of semaglutide. The mean body weight change in the treatment group was -16.0%, compared to a change of -5.7% for the placebo. In the treatment group, 86.6% of participants lost 5% or more of their bodyweight, compared to 47.6% of the placebo achieving the same result (16).

Another trial by Khoo et al (20210 (n=1961) included participants who had a BMI of 30 or greater (or 27 or greater if presenting with weight related comorbidities) and were not diagnosed with type 2 diabetes mellitus (17). Treatment group was given 2.4 mg of semaglutide subcutaneously once a week for 68 weeks, and also had a lifestyle intervention of counselling sessions every 4 weeks. These sessions were to provide guidance to participants so that they were able to reduce caloric intake by approximately 500kcal per day and increase physical activity to approximately 150 minutes per week. There was a significant difference in change in body weight when comparing placebo and treatment groups. By week 68, participants in the semaglutide group presented with a mean change in body weight of -14.9% versus -2.4% in the placebo group. For one third of subjects in the treatment group, their weight loss of at least 20% of baseline weight was comparable to results of post sleeve gastrectomy (a form of bariatric surgery which yields 20-30% weight loss 1-3 years post-surgery) (17).

Sustainability

Long-term adherence to any intervention is important in sustaining weight loss and achieving resulting health benefits. In the STEP 4 study, Rubino et al (2021) enrolled 902 participants across 73 sites to see how they fared in receiving long-term (48 weeks) semaglutide versus placebo following an initial 20 week run of 2.4mg of semaglutide weekly (18). In addition, all participants were provided with monthly counselling, where they were guided and reviewed to reduce caloric intake by 500kcal per day and increase physical activity to 150 mins per week. Subjects did not have diabetes mellitus and had a BMI of 30 or more or 27 or more if they had an existing weight-related comorbidity. Following the initial 20 week period where all participants were given weekly semaglutide, there was a reduction in mean body weight of 10.6%. By the end of 68 weeks, those who had continued semaglutide saw a mean body weight reduction of 7.9% compared to an increase in body weight by 6.9% in the group that was switched to placebo from semaglutide. Significantly, 39.6% of participants who continued on with semaglutide lost 20% or more of their body weight compared to 4.8% in the placebo group. 71.4% of participants registered gastrointestinal tract disorders as adverse events, although most were not very severe. This study indicates long term and sustainable weight loss is possible with ongoing use of semaglutide (18).

Risks of Semaglutide

An important caveat in the studies reviewed is the higher incidence of gastrointestinal issues in those in the treatment group. In some cases (such as in the STEP 3 trial) this led to a higher percentage of participants discontinuing the treatment (3.4% vs 0% in the placebo) (16). Lingvay et al (2020) conducted a mediation analysis to identify whether individuals who experienced gastrointestinal (GI) issues when on semaglutide had any difference in weight loss (19). This study included patients who said “yes” to vomiting, nausea or any adverse GI event in three previously carried out studies which looked at the effects of semaglutide on weight loss versus other treatments. Although weight loss has been shown to be greater in patients who experience GI side effects from GLP-1 agonists, this study indicated that semaglutide demonstrates greater weight loss independent of its higher incidence of side effects. Because side effects may impact adherence to drug protocol, further inquiry into GI side effect management may be warranted.

Conclusion

Semaglutide has shown to be a promising avenue for weight loss in obese and overweight individuals. Approval has been granted for its use in weight management by the Food and Drugs Administration (FDA) and is currently being reviewed by UK National Institute for Clinical Health and Excellence (NICE). In order to ensure sustained and continued use, further research into the management of GI adverse events may be useful. Long term use resulting in sustained weight loss could help reduce the burden of obesity and its related comorbidities.

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Burden of hypothyroidism in the primary care population in Qatar

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Received: July 2021; Accepted: August 2021; Published: September 1, 2021.
Citation: Shaikh S, Rajkumar Honest PC. Burden of hypothyroidism in the primary care population in Qatar. World Family Medicine. 2021; 19(9): 65-71 DOI: 10.5742/MEWFM.2021.94126

Abstract

Hypothyroidism is a common condition which is often managed in primary care. There is considerable prevalence information on the condition in Europe and USA, however little is known about the prevalence in the Middle East, particularly in Qatar. The purpose of the study was to establish the burden of the disease in the primary care population in Qatar.

This observational study used electronic health data from primary care records of all adults registered with Primary Health Care Corporation (PHCC). Patients were identified as having hypothyroidism by using selected SNOMED CT codes. The prevalence of hypothyroidism was estimated at approximately 4.74%. The majority of hypothyroid patients (57.23%) were found to suffer with additional comorbidities. Given the ease of access to private health care, and those patients choosing to have health care outside the country, this may be an underrepresentation of the true prevalence.

Key words: hypothyroidism, primary care, Qatar

Introduction - Hypothyroidism

The hypothalamic pituitary axis controls the production of thyroxine from the thyroid gland. Thyroxine acts on almost all nucleated cells in the body and is essential for growth and energy metabolism [1]. Hypothyroidism can be difficult to detect as the symptoms are often nonspecific and insidious in onset. Symptoms include weight gain, fatigue, constipation, hair loss and cold intolerance [2].

The most common cause of hypothyroidism worldwide is iodine deficiency as over one billion of the world's population live in iodine deficient areas [3]. In the developed world, the commonest cause of hypothyroidism is autoimmune thyroid disease [4]. Thyroid disease can also be the result of destruction of the thyroid gland by radio-iodine treatment or thyroid surgery.

Prevalence of hypothyroidism

Investigating prevalence can be helpful in identifying trends in diseases which is particularly useful when comparing populations. Information on prevalence can help to establish the burden of the disease which is essential when allocating resources.

The prevalence of hypothyroidism ranges from 1% to 2% [5]. Hypothyroidism is ten times more common in women than in men [6] and affects Caucasian individuals more than Afro-Caribbean individuals [7]. The incidence of hypothyroidism is higher in the elderly population and can be as high as 7% in individuals aged between 85 and 89 years [8]. However TSH levels rise in relation to age and there is discussion around the need for age specific reference ranges.

Globally the prevalence of hypothyroidism varies considerably. This is attributed to both iodine deficiency as well as reduced reporting in many developing countries. The prevalence of hypothyroidism ranges between 0.2% - 5.3% in Europe [9] and 0.3% - 3.7% in the USA [10]. Studies conducted in India have shown significant variability in the rate of hypothyroidism depending on geographical location, with coastal regions having lower rates compared to inland areas. A population study of Cochin showed a prevalence of 3.9% compared to Kolkata which had a prevalence of 21% [11]. The extent of autoimmune thyroid disease in Africa remains unknown due to the limited number of studies as well as the underreporting of cases. However, the prevalence of a goitre varies from 1% - 90% depending on geographical location [12].

There is limited data on the prevalence of hypothyroidism in the middle east. The annual incidence of hypothyroidism in Iran was found to be 0.2% [13]. A study conducted in Libya found the prevalence of hypothyroidism to be 6.18% and in certain areas of Saudi Arabia the prevalence was reported to be 47% [14]. The presence of a goitre has been reported in many studies across Egypt, Algeria and Bahrain. At present there is no data on the burden of hypothyroidism in Qatar. This study will aim to investigate the burden of the disease in primary care in Qatar. Qatar is a country on the west coast of the Persian Gulf with a population of 2.7 million. Primary care physicians play a key role in the diagnosis and the management of hypothyroidism. PHCC provides primary health care services to the bulk of the population in Qatar.

Aim

At present there is no published data on the burden of hypothyroidism. The purpose of the study was to establish and describe the epidemiology of hypothyroidism in primary care in Qatar, focusing on those patients cared for by primary health care services (Primary Health Care Corporation, PHCC). This study aims to understand the burden of disease; the number of patients diagnosed with hypothyroidism as documented on the medical records as a consolidated problem. It also identified the number of patients prescribed treatment (thyroxine) and who are monitored (via blood tests).

Material and methods

Design and setting

This was a cross sectional observational study using primary care electronic health data from 876,991 patients over 27 health centres located across the country.

Data collection

The study population included all adults (aged over 18 years) registered at PHCC between 1st January 2018 to 30th September 2020. Data was managed and anonymised as per research committee protocols.

The search was conducted in order to ascertain the number of patients with a diagnostic code of hypothyroidism as documented as a consolidated problem by searching for SNOMED CT codes (Table 1). Information was collected on hypothyroid monitoring, whether the patient had a blood test and the level of the TSH, as well as the treatment of the condition by noting whether a prescription of thyroxine was issued. To assess the burden of long-term conditions on the study population, diagnostic data on comorbidities was recorded including whether the patient had hypertension, diabetes, cardiovascular disease, dyslipidaemia, asthma/COPD, cerebrovascular disease, cancer, CKD and obesity. Sociodemographic information on age, gender and nationality was obtained.

Data Analysis

All data were analysed using Microsoft Excel Version 16.4 [15] Basic descriptive statistics were used to identify age, gender and nationality amongst other variables of interest detailed in the appendix.

Results

PHCC has a total of 7,96,427 population above 18 years of age. The total number of patients suffering from hypothyroidism was 37,709 as identified by the SNOMED codes listed in Table 1. The estimated prevalence of the condition was 4.74%. The mean age of the population was 42.82 +/- 13.81 (range 18-108 years). 55.79% of patients with hypothyroidism were aged between 25-45 years. (Table 2) 82.82% of the patients were female (Table 3). Qatari nationals accounted for one third (12399) 32.88% of the patients in comparison to 67.12% (25310) which were identified as non-nationals (Table 4).

A significant proportion of hypothyroid patients (57.23%) were found to suffer with other comorbid conditions (Table 5 and Figure 1). Most commonly hypothyroid patients were documented to have dyslipidaemia (29.24%) followed by diabetes (27.07%), hypertension (24.09%) and obesity (19.58%). Around 24.52% of patients had one additional comorbidity (Table 6) and 3 patients had an additional 8 comorbidities (0.01%).

With regards to the management of hypothyroidism 75.75% of patients had received a prescription of thyroxine and over half (57.21%) of these patients had thyroxine issued in 2020 (Table 7). Around 60.44% of patients had bloods undertaken in 2020 and 5.25% had no documented bloods on records at all (Table 8). 67.3% of patients had bloods within the normal range (Table 9).

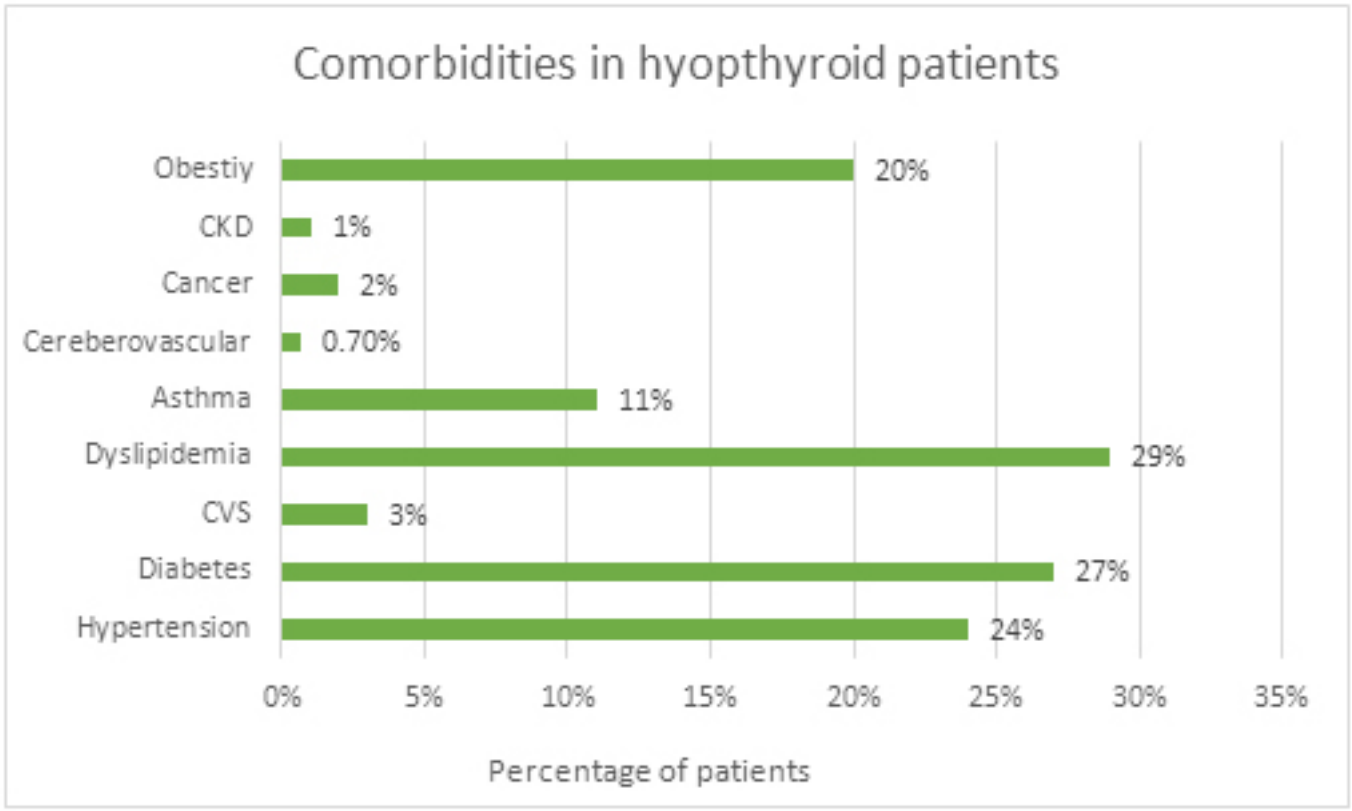

Figure 1: Comorbidities in hypothyroid patients

Table 1: Hypothyroidism SNOMED codes

SNOMED code	Number of patients
Acquired central hypothyroidism	24
Acquired hypothyroidism	1056
Autoimmune hypothyroidism	146
Borderline hypothyroidism	99
Central hypothyroidism	45
Compensated hypothyroidism	16
Congenital hypothyroidism	3
H/O: hypothyroidism	418
History of hypothyroidism	49
Hypothyroid	7036
Hypothyroid coma	2
Hypothyroid facies	1
Hypothyroid goitre acquired	7
Hypothyroid goitre acquired	1
Hypothyroid obesity	1
Hypothyroidism	21684
Hypothyroidism post-radioiodine therapy	1
Hypothyroidism unspecified	1
Hypothyroidism after surgery	10
Hypothyroidism due to Hashimoto thyroiditis	3
Hypothyroidism due to Hashimoto's thyroiditis	4
Hypothyroidism due to thyroid insensitivity to TSH	1
Hypothyroidism due to thyroiditis	1
Hypothyroidism following radioiodine therapy	6
Hypothyroidism in pregnancy	361
Hypothyroidism in pregnancy antepartum	4
Hypothyroidism with positive thyroid antibodies	3
Iatrogenic hypothyroidism	7
Idiopathic atrophic hypothyroidism	1
Post-ablative hypothyroidism	5
Postoperative hypothyroidism	5
Postsurgical hypothyroidism	27
Primary hypothyroidism	33
Secondary hypothyroidism	26
Severe hypothyroidism	2
Subclinical hypothyroidism	6589
Subclinical iodine deficiency hypothyroidism	31

Table 2: Age of hypothyroid patients

Age	Total number of patients	Percentage
18-25	3225	8.55%
25-45	21039	55.79%
45-65	11184	29.66%
More than 65	2261	6%

Table 3: Prevalence by Gender

Gender	Total Number	Percentage
Female	31232	82.82%
Male	6475	17.17%
Not documented	2	-

Table 4: Qatari or Non-national

Nationality	Number of patients	Percentage
Qatari	12399	32.88%
Non-national	25310	67.12%

Table 5: Hypothyroidism and prevalence of comorbidities

Chronic condition	Total number of patients	Percentage
Hypertension	9085	24.09%
Diabetes	10208	27.07%
Cardiovascular disease	1272	3.37%
Dyslipidaemia	11027	29.24%
Asthma/COPD	4309	11.43%
Cerebrovascular disease	287	0.76%
Cancer	959	2.54%
CKD	748	1.98%
Obesity	7385	19.58%

Table 6: Hypothyroidism and number of additional comorbidities

1	9247	24.52%
2	5355	14.20%
3	3905	10.36%
4	2049	5.43%
5	772	2.05%
6	208	0.55%
7	40	0.11%
8	3	0.01%

Table 7: Patients with record of thyroxine prescription

Last record of TSH Year	Total number of patients	Percentage
2020	22793	60.44%
2019	10037	26.62%
2018	2902	7.70%
No recorded TSH	1978	5.25%

Table 8: Record of last TSH blood test

Last record of thyroxine year	Total number of patients	Percentage
2020	21573	57.21%
2019	4694	12.45%
2018	1302	3.45%
2017	994	2.64%
None recorded	9146	24.25%

Table 9: TSH within reference range

TSH level	Total number of patients	Percentage of patients
Less than 0.4	2487	6.96%
Between 0.4-5.3	24048	67.30%
More than 5.3	9196	25.74%
Total patients with bloods recorded	35731	

TSH reference range 0.4 mIU/L - 5.3mIU/L

Table 10: Thyroxine prescribing in subclinical hypothyroidism

	Prescription of thyroxine	No prescription of thyroxine
	28563	9146
Patients identified as having subclinical hypothyroidism	2393	4196

Discussion

Prevalence of thyroid disease is 27% according to a recent multimorbidity study from Qatar [16]. The estimated prevalence of hypothyroidism of 4.74% is similar to figures reported globally. Hypothyroidism, like many autoimmune conditions has a female preponderance and the data collected was in keeping with this, as female patients accounted for 82.82% of the patients (Table 3).

Over half (57.23%) of the patients with hypothyroidism suffered with additional comorbidities. Although there are established links between autoimmune conditions themselves, these conditions were not the subject of investigation in this particular study. Some conditions such as obesity and consequently dyslipidaemia are likely to be linked to hypothyroidism through the mechanism of action of an underactive thyroid gland.

Almost a quarter of patients (24.25%) who had a diagnosis of hypothyroidism had no thyroxine prescription (Table 7), however almost half of these patients had a diagnosis of subclinical hypothyroidism (Table 10) and this would be in keeping with the management of subclinical hypothyroidism. There is varying clinical practice around the management of subclinical hypothyroidism and indeed 36.31% (2,393) of such patients were prescribed thyroxine. This specific cohort of patients with a diagnosis of subclinical hypothyroidism and a prescription of thyroxine may also include those patients who progress to overt hypothyroidism in which the records have not been updated.

Conclusion

Hypothyroidism is a common condition affecting approximately 4.74% of the patients cared for by PHCC. It is likely that the management and monitoring of the condition is underrepresented in PHCC, firstly due to the ease of access of private practice in the country but also due to the large native foreign population who access health care in their home countries. There was a significant increase in the number of blood tests and thyroxine prescriptions issued in 2020 compared to the year previous (360% increase). This could be reflective of the travel restrictions imposed during the covid-19 pandemic. Given that the majority of hypothyroidism patients have concurrent health conditions, it is important for practitioners to manage the care of such patients in a holistic manner.

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Knowledge, Attitudes, and Practice of mothers toward permanent and temporal contraindications of Breast Feeding in Taif city, Saudi Arabia

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Received: July 2021; Accepted: August 2021; Published: September 1, 2021.
Citation: Elnashar M. A. et al. Knowledge, Attitudes, and Practice of mothers toward permanent and temporal contraindications of Breast Feeding in Taif city, Saudi Arabia . World Family Medicine. 2021; 19(9): 72-82
DOI: 10.5742/MEWFM.2021.94129

Abstract

Introduction: Breastfeeding plays an important role in newborn life as it gives nutritional and emotional dependency of the baby on the mother. While there are a lot of contraindications of breastfeeding, not all infectious diseases prevent breastfeeding as they can be treated and controlled

Awareness of the mother about relative and absolute contraindications of breastfeeding is very important to preserve the health of her baby.

Aim: In this study, we would like to know the level of awareness about the relative and absolute contraindications of breastfeeding among mothers of Taif city

Methodology: This cross-sectional study was conducted in Taif city, KSA from January 2021 to June 2021, and data was obtained by online questionnaire. Data was entered through Excel version 16.16.23, and all Statistical analysis was done by using SPSS ver23 (IBM corp. the USA) by an independent biostatistician. The categorical variable was analyzed by using Pearson's Chi-square test. Continuous variables obtained are expressed as mean and standard deviation. The significance value (p-value) <0.05 is considered statistically significant

Result: The assessment of knowledge level related to breastfeeding showed that only 7.9% had good knowledge, and most of the participants had poor knowledge (82.1%). When we assessed the relationship of this knowledge level with the age of the mothers, it was found that mothers who were 18-28 years of age had comparatively more 'good' knowledge (20.0%) than other age groups

Conclusion: In general, level of awareness in terms of contraindications of breastfeeding in our study was very low, so we need to increase awareness of Healthcare professionals as they have a critical role in spreading information and encouraging women to breastfeed. The health education program should be implemented as soon as possible.

Key words: breastfeeding, Knowledge, Attitudes, and Practice of mothers, Taif city, Saudi Arabia

Introduction

Breastfeeding should be a vital part of newborn life. It provides nutritional and emotional needs of the baby [1].

Breastfeeding has been classified by the World Health Organization as exclusive, predominant, or complimentary. Exclusive breastfeeding refers to the use of breast milk only.

Predominant breastfeeding refers to breast milk used as a predominant source of nourishment. It can include water and water-based drinks, fruit juice and ORS, drops or syrups (vitamins, minerals and medicines).

Complementary feeding is breast milk use along with any food orliquid, including non-human milk and formula [2]. The WHO recommends exclusive breastfeeding up to 6 months old, with continued breastfeeding along with appropriate complementary feeds up to 2 years old or beyond [3].

¶There are many contraindications during breast feeding, n some instances continuing breastfeeding is typically recommended, while in other rare conditions it isn't recommended [4].

Concerns and questions on various health-related conditions regarding infant breastfeeding should be discussed and reevaluated [5].

In general, acute infectious diseases within the mother aren't a contraindication to breastfeeding, if such diseases are readily controlled and treated. Breastfeeding contraindications are due to maternal or fetal causes. Maternal causes of breastfeeding contraindication include infectious diseases such as active untreated tuberculosis, active varicella (if the infection is acquired between 5 days before the delivery and three days after the delivery), acute hepatitis A and active cytomegalovirus or using drugs (such as amphetamines, cocaine, and heroin), and any therapeutic medication indicates a caution [6]. HIV-1, HIV-2, HTLV-I, and HTLV-II are the only real infectious diseases that areconsidered absolute contraindications to breastfeeding [7,8].

In developed countries, the yellow jack vaccine and smallpox vaccine are the only contraindicated vaccines during breastfeeding [9].

Other medical conditions within the infant are Galactosemia, Phenylketonuria, inborn errors of metabolism, genetic abnormality, Milk protein allergy [5] [10].

In Saudi Arabia, the government and various nongovernmental organizations exert many efforts to increase awareness and thus the foremost natural and safest practices of feeding are supported by a considerable number of studies that are carried out [6][11]¶

Methodology

This cross-sectional study was conducted in Taif City between the period January 2021 to June 2021, and aimed to assess the knowledge, attitude, and practices related to contraindications of breastfeeding. Ethical approval was taken from the research ethics committee at Taif University, Taif City, KSA.

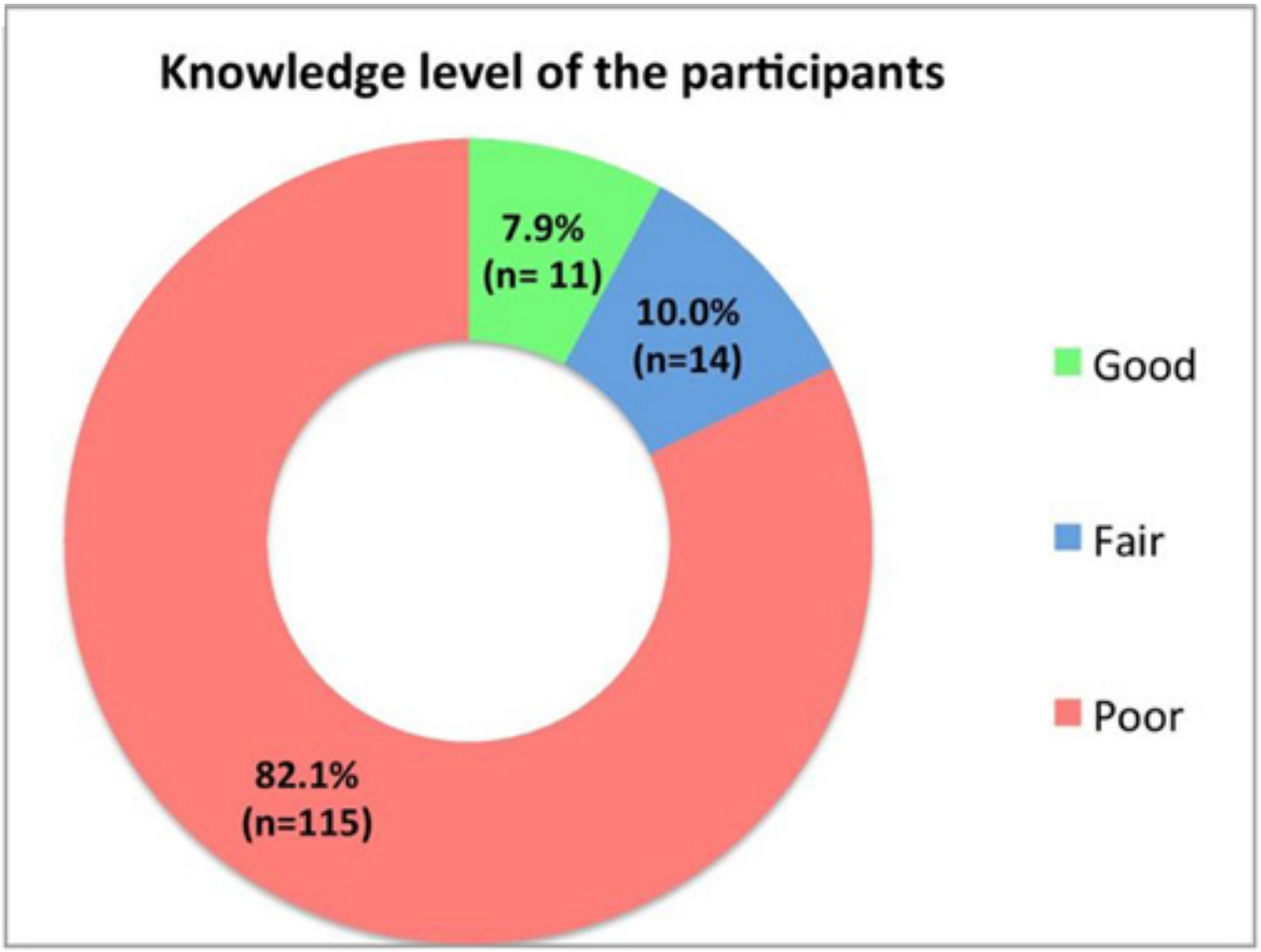
We included the mothers who are currently breastfeeding their children in Taif city. And we excluded any mothers who refused to answer the questionnaire or left an incomplete survey. The data was gathered via a self-administered online questionnaire that included several questions about sociodemographic characteristics, Maternal knowledge of the proper time to start breastfeeding, knowledge about the nutritional advantages of breastfeeding, the mother's practices of breastfeeding her baby and knowledge of mothers about contraindications of breastfeeding.

After data was collected, it was coded and entered into statistical software IBM Statistical Package for Social Sciences, Version 23 (SPSS Inc., Chicago, IL, USA) for data analysis. Categorical variables were analyzed using Pearson's Chi-square test. Continuous variables obtained were expressed as mean and standard deviation. The significance value (p-value) <0.05 was considered statistically significant.

Results

The current study assessed the knowledge, attitude, and practices related to breastfeeding among mothers who are currently breastfeeding their children in Taif city. The sociodemographic characteristics showed that 32.1% were 18-28 years, 29.3% were 29-38 years, 27.9% were 39-48 years, and 10.7% were48 or more years of age. The majority of the participants were Saudi citizens (93.5%), and 75.7% had a university level of education [Table 1]. Most of the questions in the knowledge section of the questionnaire were regarding contraindications of breastfeeding. The questionnaire had 23 items that measured the knowledge related to breastfeeding. Each correct response was given a score of 1 and wrong answers were given no scores. The scores for each participant were calculated to give the total score for knowledge, which was converted into categories based on the percentages: Good >75%, Fair=60-75%, Poor=<60%.

The assessment of knowledge level related to breastfeeding showed that only 7.9% had good knowledge, and a majority of the participants had poor knowledge (82.1%) [Figure 1]. When we assessed the relationship of this knowledge level with the age of the mothers, it was found that mothers who were 18-28 years of age had comparatively more 'good' knowledge (20.0%) than other age groups, which showed a statistically significant association (p=0.003). Similarly, employed mothers demonstrated comparatively more 'good' knowledge than unemployed mothers (p=0.020). There was no statistically significant association seen between knowledge level and nationality (p=0.352)



and also with the educational level of the participants (p=0.884) [Table 2]. It was found that 88.6% reported that breastfeeding should be started immediately after delivery and only 45% believed that breastfeeding is ideal for 4-6 months of life as recommended by WHO. When asked about the ingredients of breast milk, 52.9% agreed that it has all three contents such as carbohydrates, fat and proteins. At the same time, only 28.6% knew that it contained all the essential minerals such as Iron, Calcium, phosphate, Vitamin C, & Vitamin D [Table 3]. It was found that 64.3% believed that there are some permanent contraindications for BF, and 75.7% agreed that there are some temporary contraindications. The knowledge related to contraindications of various maternal diseases is given in Table 4.

When we assessed the practices and attitudes related to BF, only 29.3% agreed that they did exclusive BF for their child and this exclusive BF was comparatively more reported in the age groups of 18-28 years and >48 years, which showed a statistically significant association (p=0.018). The majority of the mothers (97.1%) in our study agreed that they like to breastfeed their baby and it was found to be reported by all the unemployed mothers (n=78) (p=0.023). It was reported by 70% of the mothers that they like to continue BF till the child becomes six months old. When we assessed this relationship with age, it was found that age groups of 18-28 years and 29-38 years had comparatively reported this attitude more than other age groups (p<0.001). Similarly, unemployed mothers reported that they would like to continue BF till six months (79.5%), which was more than that reported by employed mothers (58.1%) that showed a statistically significant association (p=0.006). It was reported by 74.3% of the mothers that they would like to continue breastfeeding their child till the age of 2 years, and 56.4% agreed that they would like to advise other mothers on breastfeeding [Table 5].

Table 1: Sociodemographic characteristics of the participants			
		N	%
Age (years)	18-28	45	32.1
	29-38	41	29.3
	39-48	39	27.9
	>=48	15	10.7
Employment status	Employed	62	44.3
	Unemployed	78	55.7
Nationality	Saudi	131	93.6
	Non-Saudi	9	6.4
Educational level	Primary	2	1.4
	Secondary or intermediate	25	17.9
	University	106	75.7
	Post graduate or more	7	5.0

Table 2: Knowledge level and its relationship with sociodemographic characteristics						
		Knowledge			Total	p value
		Good	Fair	Poor		
Age (years)	18-28	9	7	29	45	*0.003
		20.0%	15.6%	64.4%	32.1%	
	29-38	1	2	38	41	
		2.4%	4.9%	92.7%	29.3%	
	39-48	0	5	34	39	
		0.0%	12.8%	87.2%	27.9%	
	>=48	1	0	14	15	
		6.7%	0.0%	93.3%	10.7%	
Work	Employed	9	4	49	62	*0.020
		14.5%	6.5%	79.0%	44.3%	
	Unemployed	2	10	66	78	
		2.6%	12.8%	84.6%	55.7%	
Nationality	Saudi	11	14	106	131	0.352
		8.4%	10.7%	80.9%	93.6%	
	Non-Saudi	0	0	9	9	
		0.0%	0.0%	100.0 %	6.4%	
Education	Primary	0	0	2	2	0.884
		0.0%	0.0%	100.0 %	1.4%	
	Secondary or intermediate	2	2	21	25	
		8.0%	8.0%	84.0%	17.9%	
	University	9	12	85	106	
		8.5%	11.3%	80.2%	75.7%	
	Post graduate or more	0	0	7	7	
		0.0%	0.0%	100.0 %	%5.0	

p-value <0.05 is considered statistically significant

Table 3: General knowledge related to exclusive breastfeeding			
	0	N	%
Ideal time to start breastfeeding	Immediately after delivery	124	88.6
	Not immediate	16	11.4
The diet that should be given to baby after delivery	Glucose	4	2.9
	Breast milk	119	85.0
	Artificial milk	4	2.9
	All of the above	13	9.3
The duration of BF regulated by desire of baby	Yes	99	70.7
	No	41	29.3
BF is ideal for 4-6 months of life as recommended by WHO	Yes	63	45.0
	No	77	55.0
Breast milk has all the following ingredients: Carbohydrates, Fat & Protein	Yes	74	52.9
	No	66	47.1
Breast milk has all the following minerals: Iron, Calcium, phosphate, Vitamin C, Vitamin D	Yes	40	28.6
	No	100	71.4

Table 4: Knowledge related to contraindications of breastfeeding			
	(%) Responses		
	Yes	No	Don't know
Contraindicated Maternal disorders	66.4	4.3	29.3
Infectious diseases such as gastroenteritis, upper respiratory tract infections in the mother are not a contraindication to breastfeeding	39.3	7.9	52.9
Contraindicated in active untreated tuberculosis	22.9	2.9	74.3
Contraindicated in active varicella	39.3	7.1	53.6
Contraindicated in acute hepatitis A	35.7	5.0	59.3
Contraindicated in active cytomegalovirus	73.6	5.0	21.4
Contraindicated in using some drugs	42.9	7.1	50.0
Absolutely contraindicated in human immunodeficiency virus-1, human immunodeficiency virus-2	31.4	5.0	63.6
Contraindicated with small pox vaccine lymphotropic virus-I, and human T-cell lymphotropic virus-II	30.0	14.3	55.7
Contraindicated with Yellow fever vaccine	25.7	12.1	62.1
Contraindicated with fetal Galactosemia	17.9	5.7	76.4
Do you know that breastfeeding is contraindicated with some fetal disorders	35.0	7.9	57.1
Contraindicated with fetal Phenylketonuria	20.7	7.1	72.1
Contraindicated with fetal Lactose intolerance	27.9	12.9	59.3

Table 5: Practices and attitudes related to breastfeeding						
		N	%	P value		
				Age	Employment	Educational level
Type of breastfeeding baby in the first six months	Exclusive breastfeeding	41	29.3	*0.018	0.221	0.187
	Predominant breastfeeding	38	27.1			
	Complementary feeding	61	43.6			
Likely to breastfeed baby	Yes	136	97.1	0.457	*0.023	0.724
	No	4	2.9			
Like to continue breastfeeding Till 6 months (Exclusive BF)	Yes	98	70.0	*0.001>	*0.006	0.468
	No	42	30.0			
Like to continue breastfeeding Till 2 years	Yes	104	74.3	0.076	0.681	0.368
	No	36	25.7			
Likely to advise other mothers to breastfeed	Yes	79	56.4	0.272	0.583	0.062
	No	22	15.7			
	I don't know	39	27.9			

Discussion

Epidemiological data worldwide shows that breastfeeding (BF) has declined in recent years due to many factors and the most important ones being urbanization and maternal employment [12][13][14]. Thus the current study aimed at assessing the knowledge, attitude, and practices related to breastfeeding among lactating mothers who had children less than 2 years in Taif city. The findings of the current study showed that the majority of participants had inadequate knowledge regarding breastfeeding. A recent study done in the United Arab Emirates showed that 51.2% of the mothers had good knowledge, and only 5.5% had poor knowledge about BF [15. It was found that the majority of the mothers (88.6%) had the opinion that BF should be started immediately after 1 hour of delivery, which complies with the recommendation of WHO [16]. According to the WHO's Eastern Mediterranean Regional Office (EMRO), the rate of early breastfeeding initiation is very high (>60%). However, a decline in the rate of BF for the infant under six months has been found in the Middle East countries [17]. . In this study, it was found that a good level of knowledge was comparatively more among mothers of age group 18-28 years. This could be due to better utilization and access to health information resources and social media at this age compared to older age groups. Furthermore, the educational level of this age group might also have influenced the knowledge level. But our study didn't show any significant association with mother educational level and knowledge related to BF. It is reported that mothers who have sufficient knowledge of breastfeeding recommendations were more likely to have optimal BF practices [15], [18], [19]. Our study also found that employed mothers had comparatively better knowledge related to BF than unemployed mothers. This could also be related to the mother's educational level, where mothers with higher educational levels have an increased chance of getting employed than those with lesser education[20].. Maternal education has been found as a strong determinant for EBF [21].

The knowledge related to contraindication was not sufficient among our study participants. It was found that only 22.9%, 39.3%, 20.7%, and 27.9% of the mothers knew that it is contraindicated in active untreated tuberculosis, active varicella infections, fetal Phenylketonuria, and fetal Lactose intolerance, respectively. Only 17.9% and 31.4% knew that it was contraindicated with HIV and fetal Galactosemia, respectively. Although many infectious diseases are not contraindicated in breastfeeding, some temporary and permanent contraindications have been recommended [22].. The only real infectious contraindications to BF are human T-cell lymphotropic viruses (HTLV) I and II and HIV-1 and HIV-2 in food resource-rich countries [23], [24]. Evidence shows that EBF protects children from many infectious diseases such as gastroenteritis, upper respiratory or lower respiratory tract infection, otitis media, and respiratory syncytial virus bronchiolitis [22].. In some infectious diseases such as Ebola and Marburg hemorrhagic fevers, it is always recommended to temporarily halt BF till the mother becomes clinically well [22], [25].In some infectious diseases, preventive interventions could be done for the infant, such as vaccination, prophylactic antibiotic medications, or immune serum globulin, while continuing to breastfeed the child [22], [26].. In mothers who have taken vaccines such as the smallpox vaccine and yellow fever, vaccine during the lactating period is contraindicated for breastfeeding [[22], [27], [28]Among medical conditions in the infant, Galactosemia is the only disease that is a true contraindication to breastfeeding, and it is recommended that breastmilk should be substituted with artificial milk or infant formula in the cases of Galactosemia and Phenylketonuria [22], [29]. Thus it is imperative to have coordinated medical care and breastfeeding assistance from the physician or gynecologist for successful breastfeeding in the event of any maternal or infant illness.

When we assessed the practices related to BF, it was found that only 29.3% reported that they did exclusive breastfeeding (EBF). In Saudi Arabia, a study done in the Tabuk region had reported an EBF rate of 31.4% 9] and another study done in the Al-Ahsa region showed an EBF rate of 43.5% of the infant beyond six months [30].It was found that unemployed mothers had reported continuing BF till six months (EBF) more than employed mothers. Employed mothers, especially full-time employed women may face some barriers in exclusively breastfeeding the infants during the first six months, and this could vary by type of occupation. Some of the barriers include an unsupportive environment at the workplace, lack of privacy, and inadequate time to express breast milk [31], [32].]. These findings are supported by a similar study done in the Abha region, which reported that workplace-related problems are the most common barriers for EBF [33].In Saudi Arabia, the government is providing many benefits to promote health, and maternity leave could be extended up to 3 years for working women at 25% of the employee's salary and 60 days of full salary from the day of birth of a child [[34].. WHO recommends to BF child for the first six months of life to achieve optimal growth, improving cognitive development, and health of the child [35] It is also reported that along with other health benefits, it would strengthen the bond between the mother and the child 36] Possible limitations of this research include the cross-sectional nature of the study, which might have limited the determination of the causal relationship between knowledge level and many other independent factors. Secondly, the self-administration of questionnaires could have sometimes overestimated the practices related to breastfeeding, resulting in social desirability bias.

Conclusion

Breastfeeding knowledge, attitude, and practice improved as a result of health education; nonetheless, the percentages of women who start early, practice feeding on demand, give colostrum and intend to continue breastfeeding need to be increased. Health-care professionals have a critical role in spreading information and encouraging women to breastfeed.

The health education program should be implemented as soon as possible.

Acknowledgment:
The authors are extremely grateful to the data collectors of this study. Moath S. Almoqati, Majed A. Algrni, Abdullah A. Alsobaiee, Fahad A Alaiaf, Radoan S Algehani who helped us in data collection. Also, we would like to thank the participants who took part in our study.

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