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Associated Between Awareness And Practices Of Laboratory's Health Care Workers Towards Infection Safety Precautions And Factors In Health Care Facilities In The Makah AL-Mukarramah At Saudi Arabia 2023

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Abstract

Background

The prevention of healthcare infection safety precautions and associated factors in health care facilities the provision of safe, high quality healthcare. Infections acquired in healthcare facilities are a major public health concern, contributing to increased morbidity, mortality, and cost in both developed and developing countries. Although most of these infections can be avoided by infection safety precautions with relatively inexpensive infection and control measures in many developing countries, in Saudi Arabia healthcare facilities have no effective infection safety precautions. Additionally, there is limited information on healthcare worker infection safety precautions knowledge and practice in countries such as Saudi Arabia . ***Aim of study****: To Assessment associated between awareness and practices of laboratory's health care workers towards infection safety precautions and factors in health care facilities in the Makah AL-Mukarramah at Saudi Arabia2023.* ***Methods:*** *This cross sectional study included (300) health care professionals in Makah City at Saudi Arabia 2023. (doctors, nurses, lab workers) from primary healthcare (PHC) centers an self-administrated questionnaire was constructed by the researcher and was used for data collection. Divided in to 3 parts i.e., socio-demographic characteristics, knowledge questions about infection safety precautions and statements about practice of health care providers regarding infection safety precautions and associated factors in health care facilities* ***Results:*** *shows the majority age was(37.0%) in (30-39)years, majority of them were males (56.0%) the Nationality most of participants Saudi were(89.0%) marital status the majority of participant married were(44.0%) regarding qualification the majority of participant are bachelor were (46.0%).* ***Conclusion:*** *Inadequate infection safety precautions knowledge and unsafe practices were frequent among study participants, reflecting a potentially common problem at public healthcare facilities in Saudi Arabia. Healthcare workers have better knowledge and safer practices if they had received infection safety precautions training and had infection safety precautions guidelines in their workplace. Interventions should be designed to consider these identified factors*

Keywords: *associated, awareness, practices, laboratory's, infection, safety, factors (HCWs) primary, health care, Makah.*[1]

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Introduction

Background

Workplace health and safety is a critical element in every organization particularly in the health care facilities [1]. Healthcare professionals (HCPs) may act as a mechanical vector for the transmission of infections from patient to patient [2, 3]. Accidental exposure to body fluids can cause blood borne infections particularly hepatitis B virus (HBV), human immunodeficiency virus (HIV), and hepatitis C virus (HCV) [4]. Exposures may happen through needle stick or sharp injuries contaminated with infected body fluids or through contact with splashes [5]. The risk of Serco on version after percutaneous exposure to infected blood is approximately 0.1–0.3% for HIV, 2% for HCV, and 6–60% for HBV [6]. Infection safety precautions help to protect healthcare workers, patients, and visitors from health hazards [6–7]. It includes the use of personal protective equipment (PPE) including gloves, gowns, eye goggles, aprons, masks [8], and through the provision of professional immunization programs [9]. With inadequate infection safety precautions , the risk of acquiring infections through exposure to body fluids is substantial [10]

According to the Centers for Disease Control and Prevention (CDC), HAIs defined as infections localized or systemic condition resulting from adverse reaction to the presence of infectious agent or its toxins acquired from health care settings that was not incubating or symptomatic at the time of admission to the healthcare facility [11]. These infections are a major public health concern and a threat to patient safety, contributing to increased morbidity, mortality, and cost [12]. Based on the available evidence, the overall impact of HAIs implies prolonged in the PHC stay, long-term disability, increased resistance of microorganisms to antimicrobials, high costs for patients and their family, and unnecessary deaths [13]. In addition, it places a significant massive additional economic burden on the health care system [14]. Many HCAIs are caused by micro- organisms present on the patient's body (resident flora) or from transient sources such as healthcare workers' hands, contaminated equipment, or the environment.[15] The spread of these organisms usually results from breaches of core components of infection safety precautions measures, such as hand hygiene, disinfection and sterilization of instruments, and use of Personal infection safety precautions, safe disposal of wastes, sharps, and handling soiled linen as well as personal health and safety education, immunization programs, and post-exposure prophylaxis.[16] The use of effective and infection safety precautions measures possibly reduces the burden of HCAIs by at least 30%.[17]

Despite the availability of these low-cost IPC strategies, compliance with standard IPC practices remains very low, especially in low- and middle-income countries.[18]
Globally, HCAIs affect hundreds of millions of people each year.[19] Over 90% of these infections occur in resource- limited countries, mostly in Africa, where infections are more prevalent and adherence to infection safety precautions weak.[20] In addition, 15% of healthcare wastes are considered hazardous,16 which subsequently results in adverse healthcare outcomes such as prolonged PHC stays, long-term disability, increased antimicrobial resistance, massive additional financial burden on healthcare systems, high costs to patients and their families, and unnecessary deaths.[21]

Literature review

Faith , et al.(2019) study in Nigeria about good and fair knowledge among participants was reported as 50% and 44% respectively.[22] In Ethiopia, Yakob et al. showed that all participants had acceptable knowledge about contaminated needles and sharp materials that

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transmit disease causative agents, while 70.4% knew that gloves and gowns were required for any contact with patients.[23] In Brazil, Oliveria et al. identified a gap between knowledge of standard precautions and the practical applications among physicians.[24] In Ethiopia (2019) Beyamo et al assessed the compliance of health care workers with standard precaution practices and identified its determinants in public health institutions. The study included 250 HCWs. Nearly two-thirds (65%) of them had complied with standard precaution practices. Factors significantly associated with compliance to standard precaution practices were experience of ≤5 years, training on standard precaution, having good hand hygiene and availability of (personal protective equipment's)[25]

Online searching for studies exploring the knowledge and practices of health care workers infection safety precautions among primary healthcare workers yielded relatively few studies as most studies conducted in this field were among healthcare workers in hospitals and future health care workers. In addition, relatively limited studies were carried out in Saudi Arabia. [26]

In Al-Kharj, Alotaibi et al assessed the knowledge of as well as compliance of health care students with standard precautions. Results revealed that among surveyed 353 students, 70% had previously attended an infection control course. The knowledge and compliance with SPs levels were high. The commonest source of information self-learning while the current curriculum was the least reported one. Female students were more knowledgeable and compliant with SPs compared to males. Student`s specialty and academic level were significantly associated with knowledge and compliance regarding SPs. [26]

In Al-Qassim (2018), Al Ra'awji et al evaluated in a multicenter cross-sectional study among 354 HCWs the knowledge, attitudes, and practices regarding guidelines of hand hygiene. The average knowledge score was 63%. Health-care workers aged over 30 years had higher scores than those younger than 30 years. Those at tertiary care hospitals had higher scores than those at secondary hospitals. Almost all had positive attitudes toward hand hygiene as well as adhering to the guidelines regularly. This study concentrated on only hand hygiene as a component of standard precautions. [27]

In Makkah, Alkot et al (2016) assessed the knowledge, attitude, and practice of health care workers toward Middle East respiratory syndrome coronavirus (MERS-CoV) among HCWs in primary health-care centers after an interventional education program. The level of satisfactory knowledge, positive attitude, and good practice of studied HCWs were significantly improved after exposure to the program, as it increased from 43.3%, 45%, and 57.4% before intervention to 67.9%, 63.8%, and 64.8% after intervention, respectively ($P < 0.001$). Older age, previous training, and experience were positively correlated with higher scores of knowledge.[28]

In Hofuf (2013), Amin et al (2013) evaluated in a cross-sectional study the knowledge of clinical years medical students about standard precautions of infection control' and explored their attitudes toward the current curriculum and training in providing them with effective knowledge and needed skills with this regard. The study included 251 students. Approximately one-quarter of them (26.7%) scored ≥ 24 (out of 41points) which was considered as an acceptable level. The least knowledge score were in the areas of sharp injuries, personal protective equipment and health care of the providers. The main sources of information were self-learning, and informal bed side practices. The majority of the participants believed that the current teaching and training regarding standard precautions are insufficient in providing them with the required knowledge and skills. These studies targeted future healthcare workers. [29]

Rationale

The Previous study found that almost half of the health care workers had poor towards infection safety precautions. The finding underlines the importance of good towards infection safety precautions knowledge and the accessibility of towards infection safety

precautions guidelines to improve towards infection safety precautions practices among healthcare workers staff. The findings of this study also assessment of knowledge and practices of health care workers towards infection safety precautions and associated factors in health care facilities in the Makah AL-Mukarramah, Saudi Arabia. Effective knowledge and practices of health care workers towards infection safety precautions and associated factors in health care facilities as well as practicing them properly is very critical in controlling the transmission infections among HCWs, The difficult challenge faced by the Saudi Ministry of Health is the healthcare services. Services that are provided free of charge to all Saudi citizens, increasing awareness of health and disease..

Aim of the study

To Assessment associated between awareness and practices of laboratory's health care workers towards infection safety precautions and factors in health care facilities in the Makah AL-Mukarramah at Saudi Arabia2023

General objective:

To Assessment associated between awareness and practices of laboratory's health care workers towards infection safety precautions and factors in health care facilities in the Makah AL-Mukarramah at Saudi Arabia2023.

Materials and methods .

Study design:

This study is descriptive cross-sectional study

Study sitting:

The study has been carried out in the city of Makah Al-Mokarramah Makah PHC centers in in Makah City at Saudi Arabia Region. There are 300 primary health care centers belonging to Ministry of health (MOH) distributed as North (20) and South (19)

Study population:

MOH PHC health care professionals (n=300) distributed as follows: 50 physicians, nurses and laboratory technicians, Dental assistant, Dentist Study duration: September to October 2023 .

Sample size:

Sample size was calculated using open Epi online sample size calculator at 95% confidence level with bound on error of 5% regarding standard infection control precautions max sample size required is 300 participants.

Sample technique:

Sample technique was two stage.

At first stage: simple random sampling method will be used to select primary health care centers. At second stage: all the doctors, nurses and laboratory technicians within the selected PHCCs enrolled in the study. There are total primary health care centers. Expected numbers of HWs per each center are 10. So, we need 20 centers to collect the sample size.

Inclusion criteria:

Primary health care workers (doctors, nurses, laboratory technicians) in PHC center male and female, Saudi and non-Saudi, all ages, those who agreed to participate in the research.

Exclusion criteria:

Pharmacists, dentists, dental assistant. Those who have Vacation, disabled and absent during the data collection period **.**

Data collection tool and technique:
Data were collected by self-administrated questionnaire.
First part of the questionnaire includes questions about Demographic data of the physicians (gender, age, nationality, job title)
Second part about knowledge, and practice of towards infection safety precautions which including hand will be assessed covering hand hygiene obtained from WHO injection safety, and protective equipment utilization with barriers of adherence to towards infection safety precautions .

Data analysis:
Data were entered and analyzed using Statistical Package for Social Sciences (SPSS) software, version 24. Descriptive analysis was carried out as the mean and standard deviation (SD) were calculated for quantitative variables, frequency and proportion were calculated for categorical variables.

For comparisons, chi-square and t-test was used for categorical and quantitative variables respectively. p –value ≤0.05 was considered significant for all inferential analysis.

Ethical approval:
- The ethical approval was taken from the Regional Research Ethics committee. A permission letter was obtained from the regional director of the city of Makah Al-Mokarramah Makah MOH before starting the data collection.
- A written Informed consent was obtained from each participant from commencing the data collection.
- The researcher preserved the confidentiality of the participants at all steps of the study for the data collection, analysis and result.

Budget: Self-funded.

Table 1 Distribution of Socio-demographic characteristics of Personal characteristics of the participants (n=300)

	N	**%**
Age		
<20 years	57	19
30-39 years	111	37
40 -49 years	87	29
< 50	45	15
Gender		
Female	132	44
Male	168	56
Nationality		
Non-Saudi	33	11
Saudi	267	89
Marital status		
Single	111	37
Married	132	44
Divorced	36	12
Widowed	21	7
Profession		
Physician	63	21
Dentist	39	13

Nurse	123	41
Lab technician	33	11
Dental assistant	42	14
Qualification		
PhD/MD/equivalent	51	17
Master	75	25
Bachelor	138	46
Diploma	36	12
Experience in PHC		
<5 years	48	16
5-10 years	135	45
>10 years	117	39
Ever taken training on safety precautions		
Yes	237	**79**
No	63	21
Presence of safety precautions committee		
Yes	243	81
N o	57	19
Availability of safety precautions guidelines in the working department		
Yes	207	69
No	93	31

Table 1 shows there were 300 participants, and the majority age was(37.0%) in (30-39)years, while the age 40-49 years were(29.0%) followed by <20 years were (19.%) the majority of them were males (56.0%) while female(44.0%), regarding the Nationality most of participants Saudi were(89.0%) but the non- Saudi were (11.0%), regarding marital status the majority of participant married were(44.0%)followed by single were(37.0%) followed by divorced were(12.0%), regarding profession the majority of participant are nurse were(41.0%) followed by Physician were(21.0%) followed by dentist were(14.0%), regarding qualification the majority of participant are bachelor were (46.0%) followed by master were(25.0%) followed by PhD/MD/equivalent were(17.0%), regarding experience in PHC the majority of participant are 5-10 years were (45.0%)followed by >10 years were(39.0%) followed by <5 years were(16.0%), regarding the ever taken training on safety precautions most of participants answer Yes were(79.0%) followed by No were(21.0%), regarding the presence of safety precautions committee the majority of participant answer Yes were (81.0%) followed by No were(19.0%), regarding the Availability of safety precautions guidelines in the working department the majority of participant answer Yes were (69.0%) followed by No were(31.0%) .

Table 2: Distribution of the Healthcare workers knowledge regarding infection safety precautions .

Knowledge items	**Yes**		**No**		**Chi-Square**	
	N	**%**	**N**	**%**	**X^2**	**P-value**
I have heard about infection safety precautions	282	94	18	6	232.320	<0.001*
Gloves cannot provide complete safety protection against transmission of infections	216	72	84	28	58.080	<0.001*

Washing hands with soap or use of an alcohol based antiseptic decreases the risk of transmission of healthcare acquired infections	87	29	213	71	52.920	<0.001*
Use of an alcohol based antiseptic for hand hygiene is as effective as soap and water if hands are not visibly dirty	207	69	93	31	43.320	<0.001*
Gloves should be worn if blood or body fluid exposure is anticipated	264	88	36	12	173.280	<0.001*
Hand washing is necessary before procedures are performed	279	93	21	7	221.880	<0.001*
Tuberculosis (TB) is carried in airborne particles that are generated from patients with active pulmonary tuberculosis	240	80	60	20	108.000	<0.001*
There is no need to change gloves between patients as long as there is no visible contamination	291	97	9	3	265.080	<0.001*
Do you know how to prepare 0.5% chlorine solution	273	91	27	9	201.720	<0.001*
Safety box should be closed/sealed when three quarters filled	264	88	36	12	173.280	<0.001*

Table 2 shows the distribution of the Healthcare workers knowledge regarding I have heard about infection safety precautions, the majority of participant answer Yes were (94.0%) while answer No were (6.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 232.320, regarding Gloves cannot provide complete safety protection against transmission of infections, the majority of participant answer Yes were (72.0%) while answer No were (28.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 58.080, regarding washing hands with soap or use of an alcohol based antiseptic decreases the risk of transmission of healthcare acquired infections, the majority of participant answer No were (71.0%) while answer Yes were (29.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 52.920, regarding Use of an alcohol based antiseptic for hand hygiene is as effective as soap and water if hands are not visibly dirty the majority of participant

answer Yes were (69.0%) while answer No were (31.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 43.320, regarding gloves should be worn if blood or body fluid exposure is anticipated, the majority of participant answer Yes were (88.0%) while answer No were (12.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 173.280, regarding hand washing is necessary before procedures are performed the majority of participant answer Yes were (93.0%) while answer No were (7.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 108.000, regarding Tuberculosis (TB) is carried in airborne particles that are generated from patients with active pulmonary tuberculosis the majority of participant answer Yes were (80.0%) while answer No were (2.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 108.000, regarding There is no need to change gloves between patients as long as there is no visible contamination the majority of participant answer Yes were (97.0%) while answer No were (3.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 265.080, regarding Do you know how to prepare 0.5% chlorine solution the majority of participant answer Yes were (91.0%) while answer No were (9.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 201.720, regarding Safety box should be closed/sealed when three quarters filled the majority of participant answer Yes were (88.0%) while answer No were (12.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 173.280,

Table 3: Distribution of the Healthcare workers Practice towards infection safety precautions .

Practice items	Yes		No		Chi-Square	
	N	%	N	%	X^2	P-value
Do you apply antiseptic hand rub to clean hands?	225	75	75	25	75.000	<0.001*
Did you practice high-level disinfection where sterilization is not applicable?	216	72	84	28	58.080	<0.001*
Do you use all Personal Protective Equipment's (PPE) to prevent the risk of acquiring and /or transmitting infection?	198	66	102	34	30.720	<0.001*
Did you mix dry and liquid Healthcare wastes?	201	67	99	33	34.680	<0.001*
Do you incinerate or bury used sharp materials?	207	69	93	31	43.320	<0.001*
You change disinfectant chlorine solutions?	225	75	75	25	75.000	<0.001*
Do you know how long it takes to soak reusable medical instruments in chlorine Solution?	213	71	87	29	52.920	<0.001*
Do you use gloves more than once (both hands)?	207	69	93	31	43.320	<0.001*
Do you wear the necessary personal protective equipment (PPE) such as gloves, apron, goggles and mask, if splashes and spills of any body fluids are likely?	243	81	57	19	115.320	<0.001*
Where do you usually put sharp disposal boxes?	237	79	63	21	100.920	<0.001*

Table 3 shows the distribution of the healthcare workers Practice towards infection safety precautions regarding you apply antiseptic hand rub to clean hands the majority of participant answer Yes were (75.0%) while answer No were (25.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 58.080, regarding you practice high-level disinfection where sterilization is not applicable the majority of participant answer Yes were (72.0%) while answer No were (28.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 58.080, regarding you use all Personal Protective Equipment's to prevent the risk of acquiring and /or transmitting infection the majority of participant answer Yes were (66.0%) while answer No were (34.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 30.720, regarding you mix dry and liquid Healthcare wastes the majority of participant answer Yes were (67.0%) while answer No were (33.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 34.680, regarding you incinerate or bury used sharp materials, the majority of participant answer Yes were (69.0%) while answer No were (31.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 43.320, regarding you change disinfectant chlorine solutions the majority of participant answer Yes were (75.0%) while answer No were (25.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 52.920, regarding you know how long it takes to soak reusable medical instruments in chlorine Solution the majority of participant answer Yes were (71.0%) while answer No were (29.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 52.920, regarding you use gloves more than once (both hands) the majority of participant answer Yes were (69.0%) while answer No were (31.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 43.320, regarding you wear the necessary personal protective equipment (PPE) such as gloves, apron, goggles and mask, if splashes and spills of any body fluids are likely the majority of participant answer Yes were (81.0%) while answer No were (21.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 100.920, regarding Where do you usually put sharp disposal boxes the majority of participant answer Yes were (79.0%) while answer No were (21.0%), while is a significant relation were P-value=0.001 $\mathbf{X^2}$ 100.920,

Table 4: Distribution the knowledge of Healthcare workers towards infection safety precautions .

	Knowledge		**Score**	
	N	**%**	**Range**	**Mean±SD**
Weak	63	21	2-9.	7.12±1.99
Average	165	55		
High	72	24		
Total	300	100		
X^2	63.78			
P-value	<0.001*			

This table 4 shows the majority of participant (55.0%) have **average** of the Knowledge about infection safety precautions , followed by (24.0%) of participant high but weak were (21.0%) while Range(2-9) and Mean ±SD(7.12 ±1.99), while a significant relation were P-value=0.001 $\mathbf{X^2}$ 63.78 .

Figure (1): Distribution the knowledge of Healthcare workers towards infection safety precautions

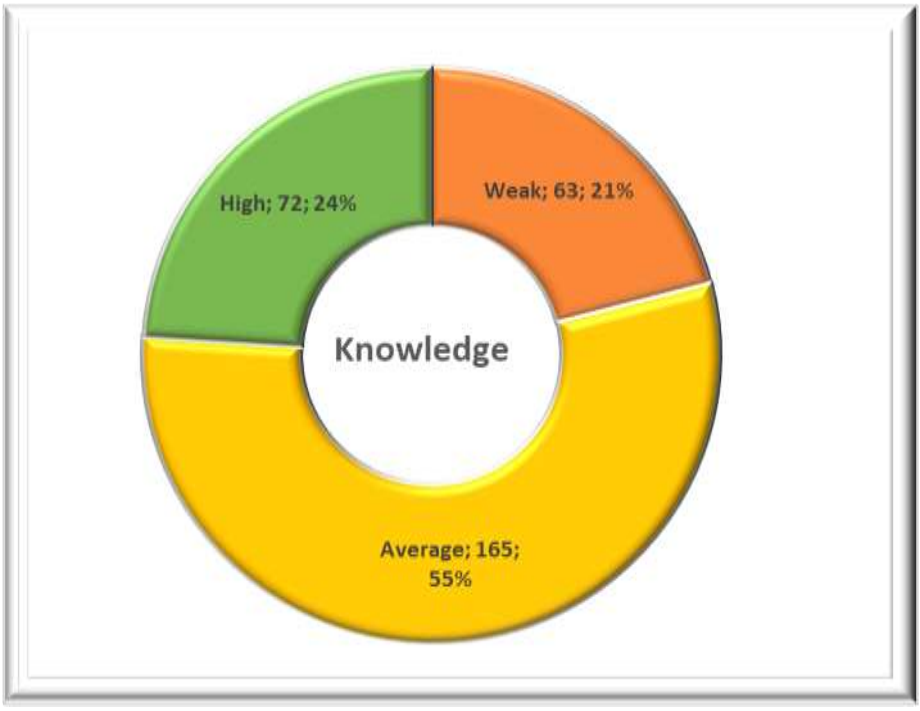


Table 5: Distribution the Practices of Healthcare workers towards infection safety precautions

	Practices		**Score**	
	N	**%**	**Range**	**Mean±SD**
Weak	117	39	1-9.	5.64±1.75
Average	132	44		
High	51	17		
Total	300	100		
X^2	37.14			
P-value	<0.001*			

regarding the practice the majority of participant (44. 0%) have average of the practice about infection safety precautions, followed by (39.0%) of participant weak while high were(17.0)while Range(1-9) and Mean ±SD(5.64 ±1.75) While a significant relation were P-value=0.001 **X^2** 37.14

Figure (2): Distribution the Practices of Healthcare workers towards infection safety precautions

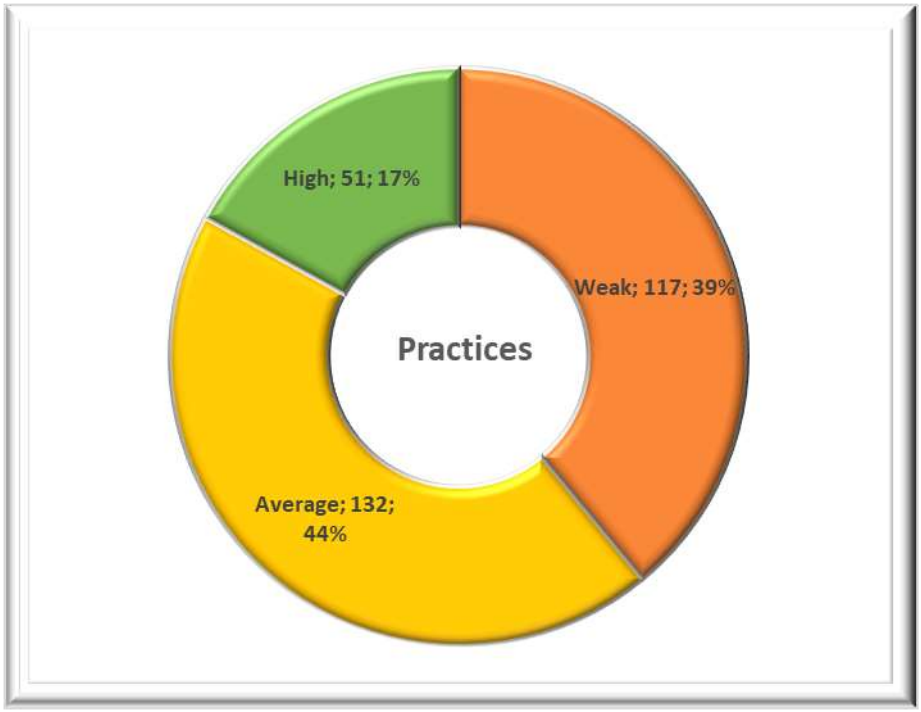
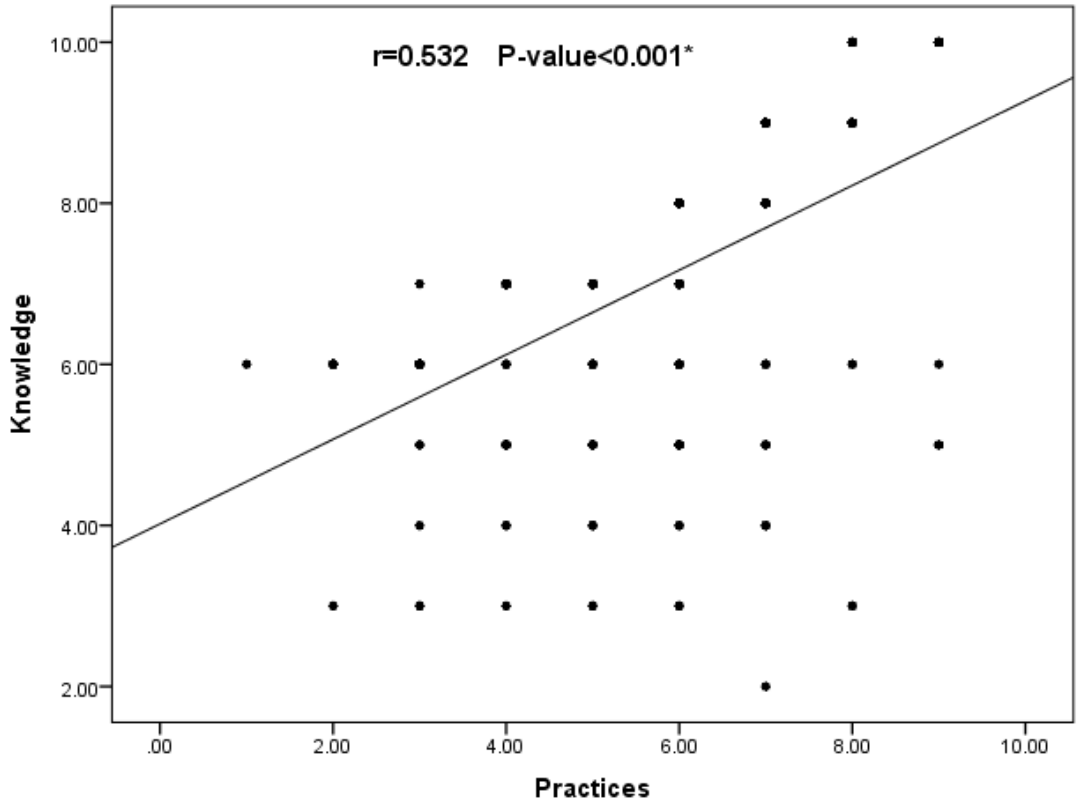


Table 6: Distribution of the Correlations between Knowledge and Practices of Healthcare workers towards infection safety precautions

Correlations		
		Knowledge
Practices	**r**	0.532
	P-value	<0.001*
	N	300

This table 6 shows the heave correlations between Knowledge and Practices while r were 0.532 and a significant relation were P-value=0.001 and N(300)

Figure (3): Distribution of the Correlations between Knowledge and Practices of Healthcare workers towards infection safety precautions



Discussion .

Reducing the risk of HAIs and using infection safety precautions principles are in the control of healthcare workers; therefore, healthcare workers must have correct, up-to-date and appropriate scientific information and practice accordingly [30]. Without knowledge infection safety precautions and patient safety practices both healthcare workers and patients are at risk of acquiring serious infections such as HIV, HBV, HCV, and Methicillin Resistant Staphylococcus aureus (MRSA) infection as well as other bacterial and viral infections [27]. Recent studies also suggest that proper and consistent application of infection safety precautions and infection safety practices can lead to up to a 70% reduction in certain HAIs [31]. This study was conducted to assessment of knowledge and practices of health care workers towards infection safety precautions and associated factors in health care facilities in the Makah AL-Mukarramah at the primary health are level . The of knowledge and practices of health care workers towards infection safety precautions is an essential step in starting and implementing a successful infection safety precautions in any healthcare facility.[32] Worldwide, many studies have shown that healthcare workers expressed variable levels of knowledge regarding infection safety precautions, with relatively limited studies have been carried out in the Kingdom of Saudi Arabia.[33] Therefore, the present study was conducted the present study. One of the most important characteristics of Makah is its location, which is characterized by proximity to Makah. In our study showed were 300 participants, and the majority age was(37.0%) in (30-39)years, males (56.0%) most of participants Saudi were(89.0%), profession the majority of participant are nurse were(41.0%), regarding experience in PHC the majority of participant are 5-10 years were (45.0%), regarding the presence of safety precautions committee the majority of participant answer Yes were (81.0%) (see Table 1) Also showed that most of participants had high knowledge regarding infection safety precautions. In this study, the proportion of healthcare workers who were knowledgeable

about infection safety precautions majority are average was found to be 55.0%. similar studies in Ethiopia [30]]This finding indicated that a large percentage of respondents (46.3%) in the healthcare infection safety precautions and associated factors in health care facilities inadequate knowledge about infection prevention, a finding in line with similar studies in Africa [31]. (See table 4,5)

On the other hand, the proportion of knowledgably participants is lower than studies in facilities in Bahir Dar city and Addis Ababa which reported 69% and 84.2% of healthcare workers had good infection safety precautions knowledge [33]

This discrepancy may be due to difference in study setting and study variables since the former study focused only the two components of infection prevention (hand hygiene and tuberculosis infection control) and includes only two university hospitals in Addis Ababa the later includes private healthcare facilities. Similarly, the result is inconsistent with that. [34].

Conclusion

The present study revealed that a significant proportion of healthcare workers were knowledgeable about infection safety precautions. The overall level of safe infection safety precautions practice among healthcare workers is considered to be weak. The current study also detected that there was a high prevalence of occupational needle stick injury and blood and body fluid splashes among healthcare workers. Factors such as the presence of infection prevention guidelines in the work place and training were independent predictors of infection safety precautions practice and better knowledge. Providing on job continuous educational training on infection safety precautions is essential as well as ensuring the availability of infection safety precautions guidelines in working department should be effective and important interventions to improve healthcare workers infection safety precautions and knowledge. In the future researchers should consider stronger observational study designs to validate the self-reported practice of healthcare workers and to determine actual practices, as well as the actual prevalence of HAIs as result of poor infection safety precautions practice

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