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Impact Of Knowledge And Attitude About Utilization Of Laboratory Among Nursing In Saudi Arabia In 2024

Tahani Mohammed Abdullah Alqahtani[1], Abdullah Arif Turjoman[2], Ahad Abdulrahim Daghistani[3], Shaker Ahmad Mohammed Alshamrani[4], Anas Omar Mohammad Sindi[5], Abdullah Saud Fahd AlQahtani[6], Abdulrahman Mutlaq Alyahya[7], Najah Fayhan Alosaimi[8], Waad Saqer Alanazi[9], Roaa Mustafa Shaldoum[10], Aziza Mohammed Muhurji[11], Mazen Mustafa Shaldoum[12]

[1]Medical Laboratory Specialist, Al-Quwaiyah General Hospital, Saudi Arabia.
[2]MD, Director of Laboratory and Blood Bank at King Fahad Medical City, Riyadh, Saudi Arabia.
[3]Laboratory technician, King Abdullah medical complex - Jeddah, Saudi Arabia.
[4]Laboratory Technician, Hera General Hospital, Saudi Arabia.
[5]Nursing technician, Hera General Hospital, Saudi Arabia.
[6]Technician-Laboratory, Riyadh First Health Cluster, Saudi Arabia.
[7]Nursing Technician, Dawadmi General Hospital, Third Health Cluster-Riyadh-Saudi Arabia
[8]Laboratory specialist, Shagra general hospital, Saudi Arabia.
[9]Laboratory specialists, Northern Area Armed Forces Hospital, Hafar Albatin, king Khaled Military City, Saudi Arabia.
[10]Laboratory and Infection control specialist, Branch of Ministry of Health, Makkah Al Mukarramah, Saudi Arabia.
[11]Nursing Specialist, Branch of Ministry of Health, Makkah Al Mukarramah, Saudi Arabia.
[12]Laboratory specialist, Al-Taif Health cluster, King Abdul Aziz special hospital, Saudi Arabia.

ABSTRACT:

Background
Health care providers, medical laboratory and nursing professionals play vital roles in healthcare services. The increasing demand for quality and timely laboratory services and emerging technologies highlights the crucial need for continuing professional development and knowledge and attitude about used of laboratory. Despite this, there is limited information available regarding knowledge and attitude about used of laboratory in Saudi Arabia. Laboratory testing is an integral part of day-to-day primary care practice, with approximately 30 % of patient encounters resulting in a request. However, research suggests that a large proportion of requests does not benefit patient care and is avoidable. For a long time history and physical examination hare been the most important part of patient's assessment However, in recent years, the care of patients has become increasingly dependent on the results of laboratory investigations, and clinical laboratories have become major component in the delivery of health care. **Aim of the study**: To assess the nurses knowledge and attitude towards utilization laboratory services at Saudi Arabia in 2024. **Methods:** cross-sectional study involving 100 medical laboratory professionals and nursing was conducted in Saudi Arabia from July to October 2024. An online structured self-administered questionnaire was used to collect information on the participants' knowledge, attitudes. The questionnaire was designed to collect data on a number of variables related both to health services and providers and nursing staff. **Results:** the knowledge the majority of participant in high were (56.0%) about Utilization of laboratory among nursing followed by weak were (29.0%) while Range 15-23 and Mean +SD (16.255±4.012), while a significantly associated were P< 0.001 and X^2 (104.24) , regarding the attitude the majority of participant positive attitude were (79.0%) while negative attitude were (21.0%) while Range 7-13 and Mean +SD (11.08±2.248), while a significantly associated were P< 0.001 and X^2 (134.56) **Conclusion** the health care providers' and nursing hold a favorable view of the knowledge and attitude about used of laboratory. Interventions such as educational strategies, feedback and changing test order forms may improve the efficient use of laboratory tests in Saudi Arabia, however, the level of evidence is quite low and the quality is poor.

Keywords: Impact, knowledge, attitude, Utilization, laboratory, nursing, Saudi Arabia

INTRODUCTION

There is ample evidence that many investigations requested are not necessary. (1) Repeat investigations are a common cause of unnecessary requests. In one study 30% of the patients had a normal biochemical profile on admission; nevertheless most of these patients received two additional profiles during their hospital stay. (2) In none of the cases did this provide additional evidence necessary for diagnosis or management. Similar results were found for electrolyte determinations.(3)

Influencing the ordering of laboratory investigations, and in particular reducing unnecessary ones, is a vital concern to many hospitals and primary health care. The different methods Impact of knowledge and attitude about Utilization of laboratory among nursing , resource management (budget control), education, protocols and decision support systems, incentives, feedback and case note appraisal.(4)

One in every five inpatient laboratory tests ordered is unnecessary as it does not contribute to the advancement of patient care.(5) This high volume of repetitive lab testing is among the billion tests that are performed within the Saudi Arabia each year, This indicates a deficiency low of knowledge and attitude about Utilization of laboratory among nursing and health care providers' with approximately Huge sums of money in annual healthcare spending attributed to excessive testing and treatment.(6) Moreover, unnecessary blood draws contribute to hospital-acquired anemia, patient discomfort and excess downstream testing.(7)

The factors which motivate physicians to request laboratory services are confirmation of clinical impression; reassurance of patients or colleagues that something was being done, even if the results will not affect the diagnosis the or therapy and , occasionally requests are based on a desire to do a complete work-up.(8) the study of Chang et al showed that women physicians tended to order more laboratory tests than male physicians , and had a higher mean monthly cost of laboratory service per patient. The physicians who are more knowledgeable and clinically skilled used fewer and more appropriate investigations and medical services.(9)

Many educational programs such as weekly seminars, nursing and clinical staff review computer-based stems (to detect inappropriate test usage) or educational material circulated in the form of summaries of some actual patient cases were brought to the attention of the physicians and nursing to correct improper usage all these programs elicited a satisfactory response during the study time, or shortly after that. (10) Hoverer, clinicians reverted to their precious patterns of test utilization after a few months. To be effective educational programs must be continued indefinitely.(11)

For a long time history and Physical examination hare been the most important part of patient's assessment (12) However, in recent years, the care of patients has become increasingly dependent on the results of laboratory investigations, and clinical laboratories have become major component in the delivery of health care. The physicians 'and nursing Knowledge, attitude and practices towards laboratory services have been investigated(13). Laboratory investigation in hospitals and Primary health Care (PHC) centers should not be considered an isolated activity of the general practitioner. It has always been and will continue be an integral part of clinical practice in primary health care (14)

Unnecessary and excessive laboratory test requests for a patient affects patient care. It may lead to delay in correct diagnosis, misdiagnosis and faulty treatment, needless follow-up testing and appointments, prolong hospital admission stay, and unwarranted stress to the patient. Perhaps, out of all these, the most significant is risk to patient safety due to incorrect or delayed diagnosis.(15) Apart from jeopardizing the patient's safety, another very relevant consequence of inappropriate laboratory test ordering is the immense financial burden incurred to the hospital budget and ultimately National Health Services.(16)

LITERATURE REVIEW

In the study, the strong positive correlation was obtained between laboratory service-related parameters and overall hospital performance (composite of patient results, staff and work system result, and hospital efficiency and effectiveness result and flexibility performance) for Jordanian Hospitals (17) The study on US hospitals showed that clinical technology inclusive of laboratory technology drives the hospital clinical quality and financial performance (18)

Study on repeat investigations patient could access public laboratory facility only on referral from medical doctor or healthcare workers in laboratory (19) . Thus, the laboratory can help the physician

in better decision-making, which could lead to better PHC performance. The literature had suggested that laboratory results could contribute up to two-third of medical decision-making (20). Further, the literature had identified various reasons that could disrupt laboratory role in PHC like lack of resources and medical laboratory motivation (21)

Laboratory users' guidebook is important to communicate relevant information and instructions to users . In the study, the helpfulness of the handbook was the lowest-rated aspect (3.3), and most clinicians lacked a handbook (75.1%). This finding is consistent with studies where most physicians were dissatisfied with the availability or ease of understanding the handbook (22)

Study on repeat investigations judged that approximately 50% of LDH requests and 60% of serum calcium estimations were inappropriate according to explicit criteria, over-investigation is not limited to the laboratories.(16) One study showed that up to 65% ofLaboratory requests, 11% of chest X-rays, and 26% of nursing services could not be justified. There is no reason to suppose that the over-ordering of investigations is restricted to just these accounts. It is likely that there is a general problem in the use of all PHC services. (20) Hence any solution for the problem of over-ordering of investigations should be seen as part of the general issue of effective use of resources. other studies, the costs in terms of time, money, effort and convenience of initiating laboratory conservation behavior appears to overshadow lab personnel's desire to save laboratory (21)

Studies in Saudi Arabia majority of clinicians were satisfied with the laboratory services. This finding is not far from the studies conducted in eastern Saudi Arabia (23) and southwest Ethiopia , Tanzania, the finding appeared higher than studies conducted in southern Ethiopia , public hospitals of Ethiopia , Addis Abeba and Nekemte, Ethiopia , and a maternity hospital in Saudi Arabia (24) . However, those studies covered only hospitals, not primary health centres, or only physicians, not all clinicians. On the other hand, the finding is lower than the findings of the Q-Probes studies performed in the USA (25) .The discrepancy with these studies reflects the better service quality and user experiences in such resource-rich settings with more advanced diagnostic facilities.

RATIONALE

The belief that control by rules and regulations is the most effective form of bringing about a change leads to the introduction of test rationing, on assessing a randomly selected set of patients' notes, found that only 5% of the laboratory test results appeared to influence management. A limit of eight tests per day per patient was introduced. This resulted in the number of tests per patient per day falling from six to two, and the daily workload of the laboratory falling by 25%. It was found that 23% of the test results now affected patient management. Previous studies in Saudi Arabia have shown that health care physicians and nursing were most dissatisfied with the provision of timely results, advisory services and notification of panic values, including the behavioral manners of providers. However, many argue the validity of user satisfaction as a measure of quality, particularly technical aspects, as users could be more sensitive to behavioral aspects.

AIM OF THE STUDY:

To assess the nurses knowledge and attitude towards utilization laboratory services at Saudi Arabia in 2024

METHODOLOGY:

Study design:

This study is descriptive cross-sectional study was conducted among 100 participant of health services and providers and nursing staff, the was conducted on laboratory services in Saudi Arabia, was conducted from July to October 2024 in supervision of Directorate of Health Affairs in Saudi Arabia.

Study Area

The study has been carried out in Saudi Arabia . This study was conducted among the nursing in Saudi Arabia. From the July to October 2024 and it reflects a diversified demographic profile with a considerable portion of the population comes from rural descent, while others come from an urban one. This difference translates into biological, socioeconomic and lifestyle differences in the Saudi Arabia population.

Study Population

The study has been conducted regarding the impact of knowledge and attitude about Utilization of laboratory among nursing , during the July to October 2024 .

Selection criteria:

Inclusion criteria

- Nursing lab technicians of the randomly selected from health care sector
- Using laboratory services during the study period were the study population.
- Sound cognitive abilities
- All nationalities
- Both males and females.

Exclusion criteria :

- Nursing lab technicians who did not voluntarily participate were excluded

Sample size

The sample size has been calculated by applying Raosoft sample size calculator based on (The margin of error: 5%, Confidence level: 95%, and the response distribution was considered to be 20%) accordingly the Sample size is 100 of • Nursing lab technicians attending in health sector and adding 10 more to decrease margin of error. After adding 5% oversampling, the minimum calculated sample has been 100. Computer generated simple random sampling technique was used to select the study participants.

Sampling technique:

Systematic random sampling technique is adopted. After that, by using random number generator, then simple random sampling technique has been applied to select the participant. Also, convenience sampling technique will be utilized to select the participants in the study, by using systematic sampling random as dividing the total nursing lab technicians on work at clinical units by the required sample size; (100).

Data collection tool

The study employed a self-administered questionnaire to collect data from nursing lab technicians in health sector. The questionnaire was designed to collect data on a number of variables related both to health services users and providers. Descriptive statistics socio-demographic and medical data were used to determine the significant variables which may influence the utilization of this service.

Data collection technique:

Researcher has been visiting the health sector in Saudi Arabia in 2024 after getting the approval from the ministries of health . The researcher has been obtained permission from participants. After the arrival of the participants has been explained the purpose of the study to all participants attending .

Data entry and analysis:

The data were coded and introduced to the Statistical Package of Social Sciences (SPSS, version 24). The data were analyzed to present the findings in descriptive and inferential statistics. The descriptive statistics include frequencies and percentages for categorical variables, while means, median and standard deviations were used to summarize numerical data. The significant associations between demographic and background variables were detected at < 0.05 significance level.

Pilot study:

A pilot study has been conducted in the same sector due to the similarity to the target group using the same questionnaire to test the methodology of the study. As a feedback, the questionnaire has been clear and no defect has been detected in the methodology.

Ethical considerations:

Permission from the directorate of health, verbal consents from all participants in the questionnaire were obtained. All information was kept confidential, and results will be submitted to the department as feedback. The researcher described the aim and objectives of the study for the residents. No names were required to assure confidentiality of data, and all information was kept confidential only for this study's purposes.

Budget: Self-funded

RESULT

Table 1 Distribution of socio-demographic data in our study in Saudi Arabia. (n-100)

	N	%
Age		
<30 years	80	20
30-40 years	124	31
40 -50years	100	25
>50	96	24
Gender		
Female	268	67
Male	132	33
Nationality		
Non-Saudi	92	23
Saudi	308	77
Position		
Laboratory doctor	116	29
physicians	76	19
Lab nursing technician	208	52
Work experience		
Less than 10 years	180	45
10–20 years	40	10
More than 20 years	180	45
Marital status		
Un married	208	52
Married	192	48

Table 1 shows that most of the participants (31.0%) were in the age group 30-40 years follow by the (25.0%) were the age group 40-50 years, followed by age >50 years were (24.0%), the majority of them were females (67.0%) while male(33.0%), also regarding Nationality the majority of participant are Saudi were(77.0%) while Non- Saudi were(23.0%), regarding Position status the majority of participant are Lab nursing technician were(52.0%) while Laboratory doctor were(29.0%), but physicians were (19.0%), regarding work experience the majority of participant less 10 years were(45.0%) while more than 10 years were(45.0%), but from 10-20 years were (10.0%), regarding the Marital state the majority of participant married were (48.0%). While unmarried were(52.0%).

Table 2: Distribution of the knowledge about Utilization of laboratory among nursing lab technician

Do you have knowledge about		knowledge			Chi-square	
		Yes	No	don't know	X^2	P-value
knowledge number of tests provided	N	300	80	20	326.000	<0.001*
	%	75	20	5		
Percentage of standard test menu provided	N	240	72	88	128.960	<0.001*
	%	60	18	22		
Service	N	340	20	40	482.000	<0.001*

functionality/uninterrupted period	**%**	85	5	10		
Standard test availability period	**N**	324	24	52	411.920	<0.001*
	%	81	6	13		
Stepwise accreditation audit score	**N**	348	40	12	521.360	<0.001*
	%	87	10	3		
Concordance rate of malaria microscopy	**N**	356	32	12	559.280	<0.001*
	%	89	8	3		
Species agreement rate of malaria results	**N**	360	8	32	580.160	<0.001*
	%	90	2	8		
Concordance rate of TB microscopy	**N**	328	24	48	428.480	<0.001*
	%	82	6	12		

Table 2 shows regarding the knowledge about Utilization of laboratory among nursing regarding knowledge number of tests provided the most of the participants answer Yes were (75.0%) while No were (20.0%) followed by don't know were (5.0%) while a significantly associated were P< 0.001 and X^2 (326.000), regarding the Percentage of standard test menu provided the most of the participants answer Yes were (60.0%) while don't know were (22.0%) followed by No were (18.0%) while a significantly associated were P< 0.001 and X^2 (128.960),regarding the Service functionality/uninterrupted period the most of the participants answer Yes were (85.0%) while don't know were (10.0%) followed by No were (5.0%) while a significantly associated were P< 0.001 and X^2 (482.000), regarding Standard test availability period the most of the participants answer Yes were (81.0%) while don't know were (13.0%) followed by No were (6.0%) while a significantly associated were P< 0.001 and X^2 (411.920), regarding Stepwise accreditation audit score the most of the participants answer Yes were (87.0%) while No were (10.0%) followed by don't know were (3.0%) while a significantly associated were P< 0.001 and X^2 (521.360), regarding Concordance rate of malaria microscopy the most of the participants answer Yes were (89.0%) while No were (8.0%) followed by don't know were (3.0%) while a significantly associated were P< 0.001 and X^2 (559.280), regarding Species agreement rate of malaria results the most of the participants answer Yes were (90.0%) while No were (2.0%) followed by don't know were (8.0%) while a significantly associated were P< 0.001 and X^2 (580.160), regarding Concordance rate of TB microscopy the most of the participants answer Yes were (82.0%) while don't know were (12.0%) followed by No were (6.0%) while a significantly associated were P< 0.001 and X^2 (428.480) .

Table 3 : Distribution of the attitude about Utilization of laboratory among nursing lab technician

Items	**Attitude**		**Chi-square**	
	N	**%**	**X^2**	**P-value**
How often you wash your hands with proper detergent after contact with patient				
Always	308	77	360.560	<0.001*
Sometimes	80	20		
Never	12	3		
Do you use antiseptic hand rub to clean hands?				
yes	324	81	153.760	<0.001*
No	76	19		
How often do you use all personal protective equipment's as per standard to prevent infection?				
Always	304	76	108.160	<0.001*
Sometimes	96	24		
When do you change chlorine solutions that Processing? used for instrumental				
Every 24 h	276	69	57.760	<0.001*

After 2 days	124	31		
How often do you use glove when you perform procedures that need wearing glove?				
Always	320	80	144.000	<0.001*
Sometimes	80	20		
Have you ever exposed to blood or other body fluids of patients through contact or unprotected skin?				
Yes	204	51	0.160	0.689
No	196	49		
What measure did you take if you are exposed to blood or fluids, needle stick injury?				
Only taking Post exposure prophylaxis	32	8	130.320	<0.001*
Only clean by alcohol	48	12		
Only washing with water	24	6		
Taking Post exposure prophylaxis and clean by alcohol	48	12		
Taking post exposure prophylaxis and washing with water	44	11		
Clean by alcohol and washing with water	76	19		
All action taken	128	32		
Did you practice high-level disinfection where sterilization is not applicable?				
Yes	196	49	0.160	0.689
No	204	51		
What is your facility sterilization technique				
Boiling	144	36	31.360	<0.001*
steam sterilization	256	64		

Table 3 show distribution of the attitude about Utilization of laboratory among nursing regarding how often you wash your hands with proper detergent after contact with patient the majority of the participants answer always were(77.0%), while sometimes were (20.0%) but never were (3.0%) while a significantly associated were P< 0.001 and X^2 (360.560), regarding the you use antiseptic hand rub to clean hands the majority of the participants answer Yes were(81.0%). While No were (19.0%) while a significantly associated were P< 0.001 and X^2 (153.760) , regarding the how often do you use all personal protective equipment's as per standard to prevent infection the majority of the participants answer always were(76.0%), while sometimes were (24.0%) while a significantly associated were P< 0.001 and X^2 (108.160), regarding the you change chlorine solutions that used for instrumental Processing the majority of the participants answer every 24 h were(69.0%) followed by after 2 day were (31.0%) while a significantly associated were P< 0.001 and X^2 (57.760), regarding the how often do you use glove when you perform procedures that need wearing glove the majority of the participants answer always were(80.0%), while sometimes were (20.0%) while a significantly associated were P< 0.001 and X^2 (144.000), regarding the you ever exposed to blood or other body fluids of patients through contact or unprotected skin the majority of the participants answer Yes were(51.0%). While No were (49.0%) while no significantly associated were P< 0.689 and X^2 (0.160), regarding the measure did you take if you are exposed to blood or fluids, needle stick injury the majority of the participants answer all action taken were(32.0%), while Clean by alcohol and washing with water were (19.0%), but clean by alcohol and Taking Post exposure prophylaxis and clean by alcohol were (12.%) while a significantly associated were P< 0.001 and X^2 (130.320) , regarding you practice high-level disinfection where sterilization is not applicable the majority of the participants answer No were(51.0%). while Yes were (49.0%) while no significantly associated were P< 0.689 and X^2 (0.160), regarding What is your facility sterilization technique the majority of the participants answer Steam sterilization were(64.0%). while boiling were (36.0%) while a significantly associated were P< 0.001 and X^2 (31.360).

Table 4: Distribution of knowledge and attitude about Utilization of laboratory among nursing

	N	%	Score		Chi-square	
			Range	Mean +SD	X^2	P-value
knowledge						
Weak	116	29	15-23	16.255±4.012	104.24	<0.001*
Average	60	15				
High	224	56				
Attitude						
Negative	84	21	7-13.	11.08±2.248	134.56	<0.001*
Positive	316	79				

This table 4 shows regarding the knowledge the majority of participant in high were (56.0%) about Utilization of laboratory among nursing followed by weak were (29.0%) while Range 15-23 and Mean +SD (16.255±4.012), while a significantly associated were P< 0.001 and X^2 (104.24) , regarding the attitude the majority of participant positive attitude were (79.0%) while negative attitude were (21.0%) while Range 7-13 and Mean +SD (11.08±2.248), while a significantly associated were P< 0.001 and X^2 (134.56) .

Figure (1): Distribution of knowledge about Utilization of laboratory among nursing

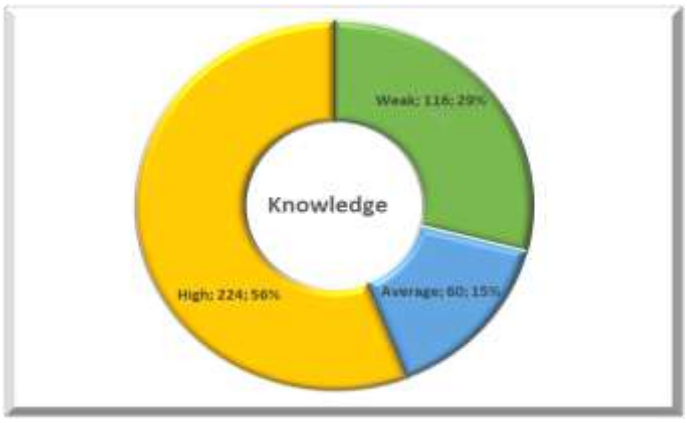


Figure (2): Distribution of attitude about Utilization of laboratory among nursing

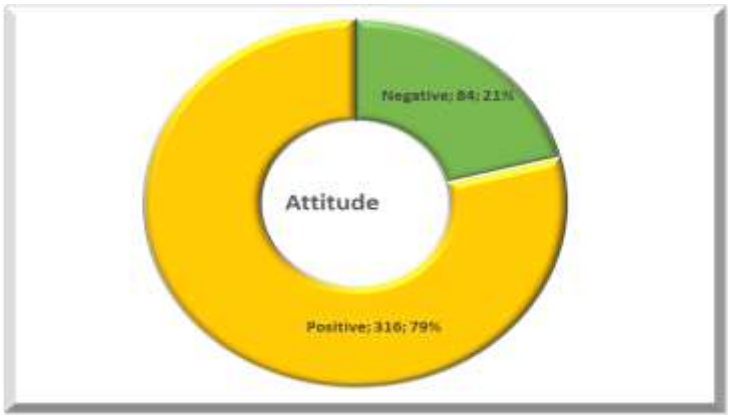
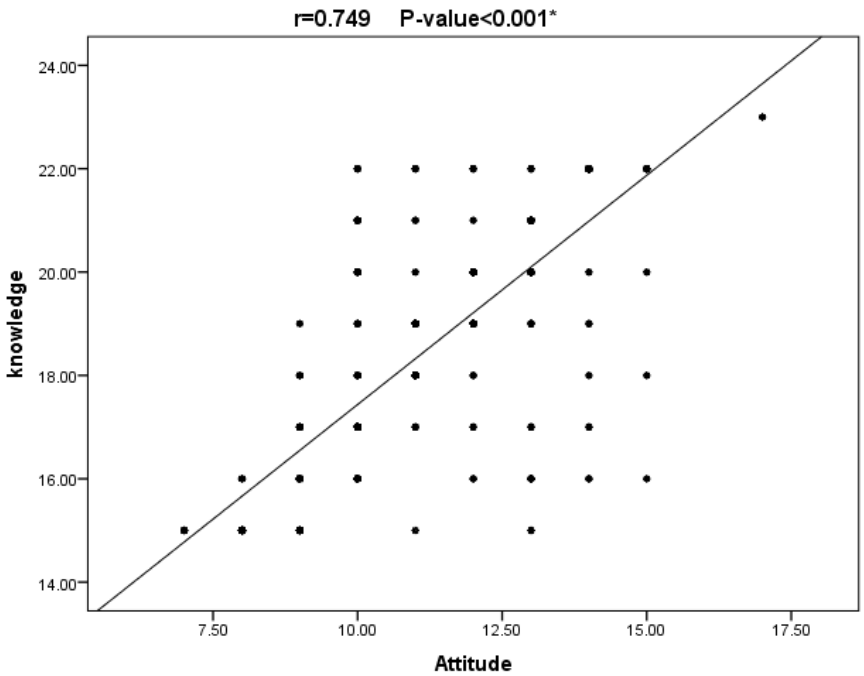


Table 5 Distribution of the Correlation between Knowledge and Attitude

Correlation between Knowledge and Attitude	
r	0.749
P-value	<0.001*

Table (5) show the Correlation between Knowledge and Attitude is a significant relation between knowledge and attitude while P-value=0.001 and r 0.749 .

Figure 3 Distribution of the Correlation between Knowledge and Attitude



DISCUSSION

Nursing staff is Key to the success of any laboratory utilization management strategy. Through an study's most sampled of nursing staff in Saudi Arabia consider miss utilization of laboratory testing

to be an important issue and perceive that both laboratory over and underutilization are occurring at high rates (25)

Regarding knowledge and attitude about Utilization of laboratory among nursing in Saudi Arabia in our study, they answered most of the related questions correctly. In line with our results (26). Laboratory utilization is an important health care facility in all areas, but the approach to ignore laboratory in health sectors facility may not be appropriate to maximize the laboratory performance. (27) Total of (100) nursing staff in the study, the researcher selected the participated from laboratory sectors, the study has been conducted regarding impact of knowledge and attitude about Utilization of laboratory among nursing in Saudi Arabia in 2024 .

One of the most important characteristics in our study shows that that most of the participants (31.0%) were in the age group 30-40 years follow by the (25.0%) were the age group 40-50 years, followed by age >50 years were (24.0%), the majority of them were females (67.0%) while male(33.0%), also regarding Nationality the majority of participant are Saudi were(77.0%) while Non- Saudi were(23.0%(, regarding Position status the majority of participant are Lab nursing technician were(52.0%) while Laboratory doctor were(29.0%) but physicians were (19.0%), regarding work experience the majority of participant less 10 years were(45.0%) while more than 10 years were(45.0%(, but from 10-20 years were (10.0%), regarding the Marital state the majority of participant married were (48.0%). While unmarried were (52.0%). Table (1)

Regarding their attitude toward Utilization of laboratory among nursing in Saudi Arabia , study, (27) reported that the majority of the participant physicians (99%), nurses (78%), and traditional providers (71%) realized the importance of knowledge and attitude about Utilization of laboratory. These percentages are higher than the results of. (10), who conducted a cross-sectional study to assess knowledge, attitude practice of the doctors, nurses, and midwives from 12 general reference hospitals, 11 hospitals and 65 health centers in Congo, and found that 60% of them knew the ultimate control measures before blood transfusion. However, the results of the present study are higher than the results of study (19), who found that 80% of the physicians, nursing staff, and paramedical staff believed in wearing gloves, and also higher than the results of study (12), who conducted a cross-sectional study among 404 physicians, nurses and technicians in Ain Shams University hospitals and reported that 93% of them knew the importance of wearing gloves. This high percentage of correct knowledge may be due to high attendance to infection

Control courses among the Lab technicians and nurses of the present study. Therefore, training courses play an important role in improving the knowledge of health care workers. In the study. (27)

In our result shows the knowledge about Utilization of laboratory among nursing staff knowledge the majority of participant in high were (56.0%) about Utilization of laboratory among nursing followed by weak were (29.0%) while Range 15-23 and Mean +SD (16.255±4.012), while a significantly associated were P< 0.001 and X2 (104.24) , regarding the attitude the majority of participant positive attitude were (79.0%) while negative attitude were (21.0%) while Range 7-13 and Mean +SD (11.08±2.248), while a significantly associated were P< 0.001 and X2 (134.56) . (See Table 4)

Distribution of knowledge and attitude about Utilization of laboratory among nursing staff information from respondents on their general attitude towards laboratory conservation as well as the use of energy efficient equipment in laboratories . It was clear that nursing staff generally have a positive view about utilization of laboratory efforts although they acknowledge difficulties in realizing conservation in their labs. Many participants revealed some prior consideration of in their lab and the view that it would be a good practice to try and implement of laboratory conservation. Some participants offered specific examples of the benefits of doing so, in our result shows Correlation between Knowledge and Attitude is a significant relation between knowledge and attitude while P-value=0.001 and r 0.749 . (See Table5).

CONCLUSION

This study highlights the Impact of knowledge and attitude about Utilization of laboratory among nursing staff in Saudi Arabia in 2024. Health care managers, as well as the government, should take more measures by running awareness programs to strengthen the Knowledge, attitude and improve the especially of nursing staff as the cost of treating patients with infection far outweighs the cost of implementing prevention programs as educational programs about Utilization of laboratory . It is

necessary to increase the level of quality of training among HCWs as it remains the key Utilization of laboratory for improving HCWs' compliance with improved standard precautions to prevent discrimination, prejudice towards the infection and the patients. Laboratory investigations are essential services for health sector physicians. The quality of current laboratory serves is deficient in the opinion of nursing staff. The utilization of laboratory tests in Saudi Arabia is most probably higher than many other developing countries with less economic welfare, but this does not necessarily mean belter utilization. The study concludes that laboratory services could play an important role in maximizing the health sector.

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