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NURSES' KNOWLEDGE OF INJECTION AND NATURE OF INJECTIONS AS CORRELATES OF INJECTION SAFETY PRACTICE AT SECONDARY HEALTH FACILITY IN AKWA IBOM NORTH-EAST SENATORIAL DISTRICTS.

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ABSTRACT

The study assessed nurses' knowledge of injection and nature of injections as correlates of injection safety practice at secondary health facility in Akwa Ibom North-East Senatorial Districts. This study employed a non-experimental descriptive method. This research was carried out in the Akwa Ibom North East Senatorial District of Nigeria. The population of the study consisted of 191 nurses in the 18 secondary healthcare facilities in Akwa Ibom North East Senatorial District. A sample of ninety 90 nurses offering direct patient care out of 191 nurses were selected from nine out of 18 secondary healthcare facilities in Akwa Ibom North East Senatorial District. Purposive sampling technique was used for the study. A researcher designed instrument tagged "Awareness of Practice of Injection Safety and Safe Injection Practice Questionnaire (APISSIPQ) was used to collect data for the study. Validity was ensured through the use of well-structured questionnaire and validation by the supervisor and two lecturers in the Department of Nursing, University of Uyo, Uyo. Descriptive and inferential statistics were employed to evaluate the data, and the Statistical Package for Social Sciences (SPSS) Version 23 (IBM, Armonk, NY) was utilized. The chi-square test was used to establish the association between the variables, and a p-value of 0.05 was selected for statistical significance. **The study showed that there is a strong association between understanding of injection nature and safe injection techniques. Based on the findings of the study it was recommended that clinical instructors work in tandem with nurses and hospital administrators to promote and guarantee the posting of universal precaution guidelines and the availability of injection safety materials and resources.**

KEYWORDS: Nurses' knowledge, injection safety practice, secondary health facility, And Akwa Ibom North-East Senatorial Districts.

INTRODUCTION

Given the widespread use of injectable drugs and vaccinations in modern healthcare, injection safety is a crucial concern. This is accompanied by the high prevalence of blood-borne infections that can spread via unintentional contact with tainted syringes and needles (Costa et al, 2017). According to estimates from the World Health Organization (WHO), billions of injections are given annually in healthcare settings worldwide. The WHO states that these injections are frequently used for therapeutic purposes, the majority of which are needless and preventable. In developing nations where safety resources and standards are not always assured, inappropriate injections can result in preventable damage (Gyawali et al., 2016). According to a recent assessment of the burden of blood-borne illnesses brought on by hazardous injection behaviors, injection practices can be linked to as many as 46% of

hepatitis B cases, 38% of hepatitis C cases, and 12% of HIV infections (Reid, 2013). Moreover, hazardous injection procedures may contribute to the spread of other infectious diseases, including the Ebola virus (Centers for Disease Control, CDC, 2015). From 2000 to 2030, a burden of 9.18 million avoidable disability-adjusted life years was predicted through modeling utilizing the fraction of blood-borne viral infections linked with improper injection practices (Dziekan, 2015).

As to the Safe Injection Global Network (SIGN) established by the World Health Organization (WHO, 2013b), a safe injection is one that does not cause injury to the receiver, does not put the healthcare workers (HCWs) at unnecessary risk, and does not generate waste that poses a threat to the public. Therefore, safe injection practices entail the rational injection of a patient by a certified and trained individual utilizing a sterile instrument, appropriate technique, appropriate disposal, and waste management. The World Health Organization (WHO, 2013b) established the Safe Injection Global Network (SIGN) (2013) as a coalition of international partners to promote and guarantee the safe, rational, and appropriate use of injections globally. Healthcare staff behavior modification is one of the coalition's strategies for achieving its goal, as noted by SIGN

STATEMENT OF PROBLEM

It has been observed globally that 25 million preventable new cases of blood borne infections like HIV, hepatitis B, hepatitis C virus infections resulted from unsafe injections. Approximately 40 percent of hepatitis C and 32 percent of hepatitis B virus infections are caused by unsafe and unnecessary injections. This unnecessary injection has completely overtaken the real need; reaching proportion no longer based on rational medical practice thus making the widespread incidences of unsafe injections an important public health problem.

RESEARCH OBJECTIVE

1. Investigate the connection or relationship between injection safety knowledge and practice at secondary health facilities in the Akwa Ibom North-East Senatorial District.
2. Assess knowledge of nature of injection and practice of injection safety among nurses at secondary health facilities in Akwa Ibom North-East senatorial Districts.

RESEARCH QUESTION

1. What is the nurses' level of knowledge of injections at secondary health facilities in Akwa Ibom North-East Senatorial District?
2. What is nurses' knowledge of nature of injection practices at secondary health facilities in Akwa Ibom North-East Senatorial District?

RESEARCH HYPOTHESES

To direct the investigation, the following research hypotheses were developed:

1. There is no significant relationship between nurses' knowledge of injections and practice of injection safety at secondary health facility in Akwa Ibom North-East Senatorial Districts.
2. There is no significant relationship between nurses' knowledge of nature of injections and practice of injection safety at secondary health facility in Akwa Ibom North-East Senatorial District.

CONCEPTUAL REVIEW

Safe Injection Practices among Nurses

A safe injection does not cause harm, does not put healthcare providers at unnecessary risk, and does not produce waste that could endanger the public (WHO, 2015). According to Missionpharma and Denmark (2015), reusing injectable equipment is a big concern and many injections performed globally are harmful. In a 2019 study, Drake examined safe injection practices among nursing staff in a tertiary hospital in Kolkata, West Bengal, India. Of the 80 nurses included in the sample, 12.5% cleaned their

hands with soap and water before giving an injection. While administering injections, 60% of them followed the WHO's recommended protocol; only 3.7% of them wore sterile gloves. In 57.5 percent of the procedures performed during the study, hub cutters were used to dispose of needles; 42.5 percent of the procedures involved recapped needles, and 41.2 percent of the procedures involved correctly disposing of spent syringes. The author came to the conclusion that a local policy and surveillance program based on the WHO standards might be useful in this case. She also concluded that there was a need to regularly educate, train, and inspire service providers, especially nurses, on safe way of handling injectable equipment.

Also, health workers must be encouraged to acquire and use internationally accepted standard materials in collection and disposal of patient's samples. However, Gyawali et al, (2013) reported that nurses working in Primary Health Care in Baglung district, Western Nepal maintained injection safety practices such as the use of auto-disable syringes to inject curative drugs. Sufficient safety boxes were also supplied to dispose the used syringes. Almost all the nurses had received full course of Hepatitis B vaccine and were knowledgeable about pathogens transmitted through unsafe injection practices. They came to the conclusion that health care professionals, especially nurses, needed to be routinely informed about injection safety guidelines in their field. Additionally, it is important to motivate healthcare professionals to obtain and utilize globally recognized standards materials while gathering and discarding patient samples. However, Gyawali et al. (2013) found that nurses employed by Primary Health Care in Western Nepal's Baglung area continued to follow injection safety procedures, such as injecting curative medications using auto-disable syringes. Additionally, enough safety boxes were provided for disposing of the used syringes. Nearly all of the nurses were aware of the infections spread by risky injection techniques and had completed a course of the Hepatitis B vaccination.

WHO STRATEGY FOR THE SAFE AND APPROPRIATE USE OF INJECTION WORLDWIDE

There are four objectives of the WHO strategy for the safe and appropriate use of injections worldwide. They are;

1. Formulating national policies and plans for the safe and appropriate use of injections.
2. Ensuring quality and safety of injection equipment.
3. Facilitating equitable access to injection equipment.
4. Achieving appropriate, rational and cost effective use of injection.

To improve, establish and sustain safe injection practices, the WHO recommends the following measures;

- Use sterile injection equipment: this is the use of a new sterile syringe and needle from a sealed pack for each injection to be administered.
- Prevent contamination of injection equipment and medication: this is actualized by preparing each injection in a clean designed area where blood or body fluid contamination is unlikely to occur with multi-dose vials. All expired drugs must be discarded.
- Maintain the effectiveness and safety of the drug by following the product's specific recommendation for use, storage and handling and the use of diluents from the same manufacturer.
- Preventing needle stick injuries to the healthcare provider by anticipating and taking appropriate action to stop patients from moving suddenly while receiving injections. Do not recap after use.
- Prevent access to used needles; seal sharps box when it is filled to two-third of its capacity and transport to a secured area for proper disposal. Manage sharps waste in a safe and environment-friendly way to protect the community from unintentional and accidental exposure.
- Reduce the administration of injections by encouraging patients to accept oral medication when possible. Injection should be given only when necessary.

EMPIRICAL FRAMEWORK

The degree of injection safety knowledge and practice among medical staff at a secondary healthcare facility in northwest Nigeria was evaluated by Abubakar et al. (2019). All of the hospital's healthcare staff were the focus of the study. A self-administered questionnaire was given to every healthcare professional that was available. Eighty-eight of the questionnaires were completed and returned for analysis. The majority of responders, who ranged in age from 31 to 40, were males in their early careers. According to the findings, 88.7% of the medical professionals accurately characterized injection safety as outlined by the World Health Organization. Only 18.7% of respondents were well-informed about the dangers of injecting drugs improperly, and 40.0% were aware of infections that could spread. Furthermore, just 25% mentioned using safe injection techniques. Of the respondents, 37.5% reported reusing syringes, while 88.7% reported recapping used needles. The majority of healthcare professionals disclosed a history of needle stick injuries that was unrelated to their line of employment. Healthcare personnel who were assessed demonstrated poor injection practices and insufficient understanding despite receiving injection safety training. The necessity for sufficient and safe injectable supplies at all levels of healthcare delivery was highlighted by the reuse of syringes and needles. This implied that the practice of dangerous injection practices could not be eradicated by healthcare personnel' training.

The degree of knowledge and adherence to injection safety practices among medical staff in Primary Health Centers in Calabar Municipality, Cross River State, Nigeria, was evaluated by Eyam et al. (2019). Determining the research area's level of awareness and adherence to the safe injection procedures indices was one of the particular aims. The survey was cross-sectional and descriptive. Using a multistage sampling technique, 398 health professionals were selected from a population of 245,681 health workers working in the five primary health clinics in the Calabar municipality. Every health professional, including support personnel and cleaners, was chosen for the study. A four-sectioned semi-structured questionnaire was used to collect the data, and SPSS version 21.0 was used for analysis of the results. The data were scored, labeled, and dichotomized for good and poor adherence to safety procedures as well as for awareness and practice of injection safety. The findings showed that, overall, 89.9% of health professionals knew enough about injection safety to be considered knowledgeable, with laboratory technicians knowing everything there was to know. With $x2 = 26.9$ and $p = 0.00$, this was statistically significant. Of the health personnel, 59.5 percent practiced safe injection practices; the laboratory technician had the lowest percentage (30 percent; $x2 = 30$, $p = 0.00$). Level of awareness and level of adherence to injection safety practices were statistically significantly correlated ($x2 = 30$; p-value = 0.00). It was determined that although healthcare professionals had a high degree of understanding regarding injection safety procedures, their commitment to these practices did not match this awareness. As a result, additional actions should be taken to enhance primary healthcare providers' safe injection administration practices in the research region.

THEORETICAL FRAMEWORK

Abraham H. Maslow's Hierarchy of Needs Theory (1943)

Abraham Maslow (1943) described the basic needs of all people as a progression from simple physical needs to more complex needs. He called this a hierarchy of needs. These needs are portrayed in the shape of a pyramid with the simple needs at the bottom and the complex needs at the top. Maslow's hierarchy of needs is a theory in psychology. He used the terms physiological, safety, belongingness and love, self-esteem, self-actualization and self-transcendence needs to describe the pattern that human motivations generally move through.

The most fundamental and basic four layers of the pyramid contain what Maslow called "deficiency needs": esteem, friendship and love, security (safety) and physical needs. If these "deficiency needs" are not met (with the exception of physical needs), there may not be a physical indication but the individual will feel anxious and tense. The human mind and brain are complex and have parallel processes running at the same time, thus many different motivations from various levels of Maslow's hierarchy can occur at any time but he focused on identifying the basic types of motivation and the order in which they can be met.

Maslow identified these needs as follows:

Physiological needs.

Physiological needs are the physical requirements for human survival. If these requirements are not met, the human body cannot function properly and will ultimately fail. Physiological needs include: Air, water, food, clothing and shelter.

Safety needs.

Once a person's physiological needs are relatively satisfied, their safety needs take precedence and dominate behaviour. In the absence of physical safety e.g. due to war and natural disaster, people may experience post-traumatic stress disorder. Safety and security needs include: Personal security, emotional security, financial security, health and well-being, safety needs against accidents/illness and their adverse impacts.

Love and belonging.

According to Maslow, humans need to feel a sense of belonging and acceptance among their social groups, regardless of if these groups are large or small. Deficiencies within this level of Maslow's hierarchy may be due to hospitalization, neglect, etc. This can impact or affect the individual's ability to form and maintain emotionally significant relationships in general. Love and belonging needs include; friendship, intimacy or family.

Esteem.

Esteem represents the typical human desire to be accepted and desired by others. All humans have a need to feel respected; this includes the need to have self-esteem and self-respect. These activities give the person a sense of contribution or value. Maslow noted two versions of esteem needs, a lower version and higher version. The lower version of esteem is the need for respect from others. The higher version manifests itself as the need for self-respect. Deprivation of these needs may lead to an inferiority complex, weakness and helplessness.

Self-actualization.

This level of need refers to what a person's full potential is and the realization of that potential. Maslow describes this level as the desire to accomplish everything that one can, to become the most that one can be. Maslow believed that to understand this level of need, the person must not only achieve the previous needs but master them.

This theory talks about the safety need of humans (most especially the patients, care givers and community in this context) which has to be met to ensure that an orderly life is lived. Patients, caregivers and the community must be relatively free from harm resulting from injection administration or danger of being exposed to sharps waste. Failure to meet this safety need may lead to infection, consequent hospitalization, anxiety and even death.

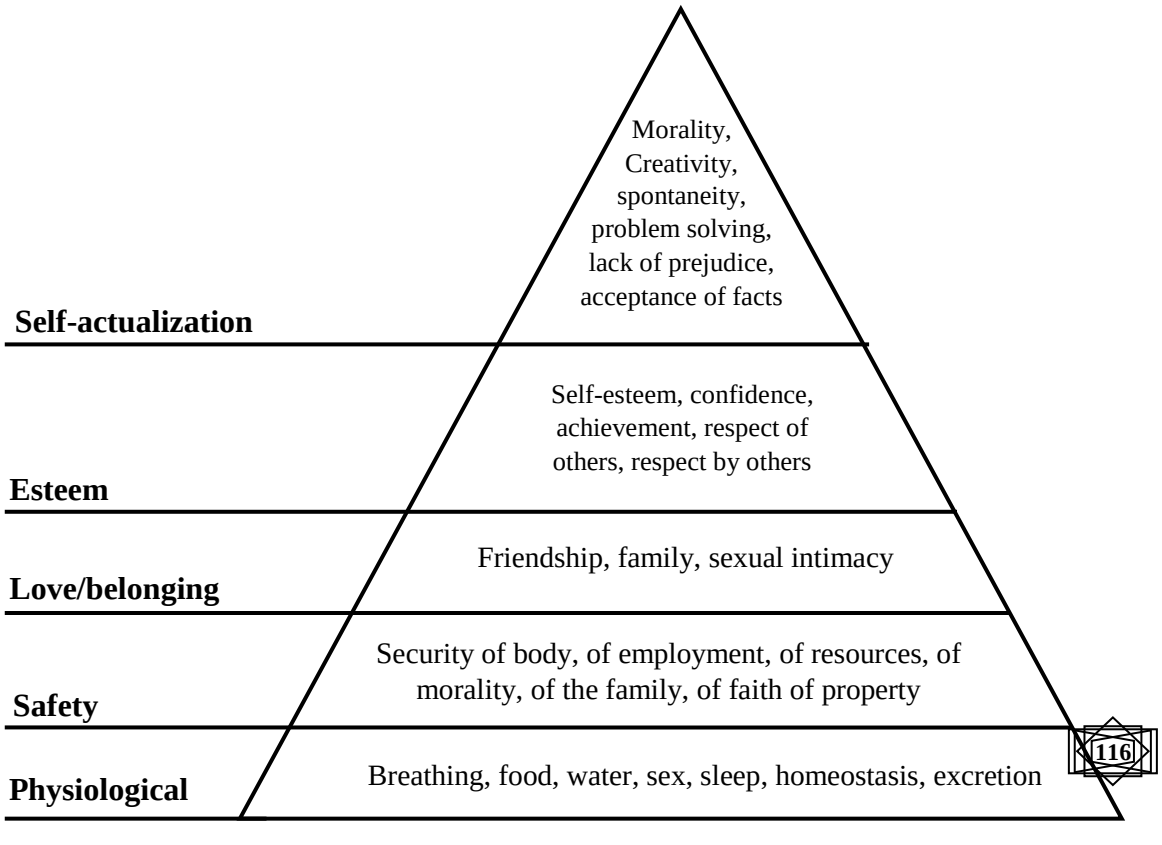

Fig 1: Abraham Maslow's Hierarchy of Needs (Factoryjoe/Wikimedia Commons)

The pyramid above shows the basic needs for human survival as propounded by Abraham Maslow in 1943.

Injection safety guides against several transmissible illnesses, disability and injuries. Health safety and wellbeing have deeply showed the importance of injection safety in ensuring proper development, psychological and social wellbeing of individuals involved in injection administration i.e., caregivers, patients and members of the community. Unsafe injection can hinder an individual to attain higher level of needs. E.g. Hepatitis B or HIV/AIDS which can be acquired as a result of an unsafe injection practice can reduce an individual's lifespan; bring about social stigma and isolation which leads to a significant reduction in the individual's self-esteem and prevent him from actualizing his potentials. Hindered health safety of an individual may also affect his psychological and physiological wholeness with emotional stability.

METHODOLOGY

This study employed a non-experimental descriptive method. This research was carried out in the Akwa Ibom North East Senatorial District of Nigeria. The population of the study consisted of 191 nurses in the 18 secondary healthcare facilities in Akwa Ibom North East Senatorial District. A sample of ninety 90 nurses offering direct patient care out of 191 nurses were selected from nine out of 18 secondary healthcare facilities in Akwa Ibom North East Senatorial District. Purposive sampling technique was used for the study. A researcher designed instrument tagged "Awareness of Practice of Injection Safety and Safe Injection Practice Questionnaire (APISSIPQ) was used to collect data for the study. Validity was ensured through the use of well-structured questionnaire and validation by the supervisor and two lecturers in the Department of Nursing, University of Uyo, Uyo. Descriptive and inferential statistics were employed to evaluate the data, and the Statistical Package for Social Sciences (SPSS) Version 23 (IBM, Armonk, NY) was utilized. The chi-square test was used to establish the association between the variables, and a p-value of 0.05 was selected for statistical significance.

Presentation and Analysis of Data According to Research Questions

Research Question One: What is the nurses' level of knowledge of injections at secondary health facility in Akwa Ibom North-East Senatorial District?

Table 1: Responses of nurses' knowledge of injections

	Knowledge of Injections	Yes	No
1	Injection is a dose of medicine given by way of a syringe and needle	90 (100%)	0 (0%)
2	I use appropriate size needle always	90(100%)	0 (0%)
3	I do proper drawing up of medication with needle and syringe	88(98%)	2(2%)
4	I always use personal protective equipment and use of Alcohol impregnated swabs	85 (94%)	5(6%)
5	I use Band aid to check for allergies	60 (67%)	30 (33%)

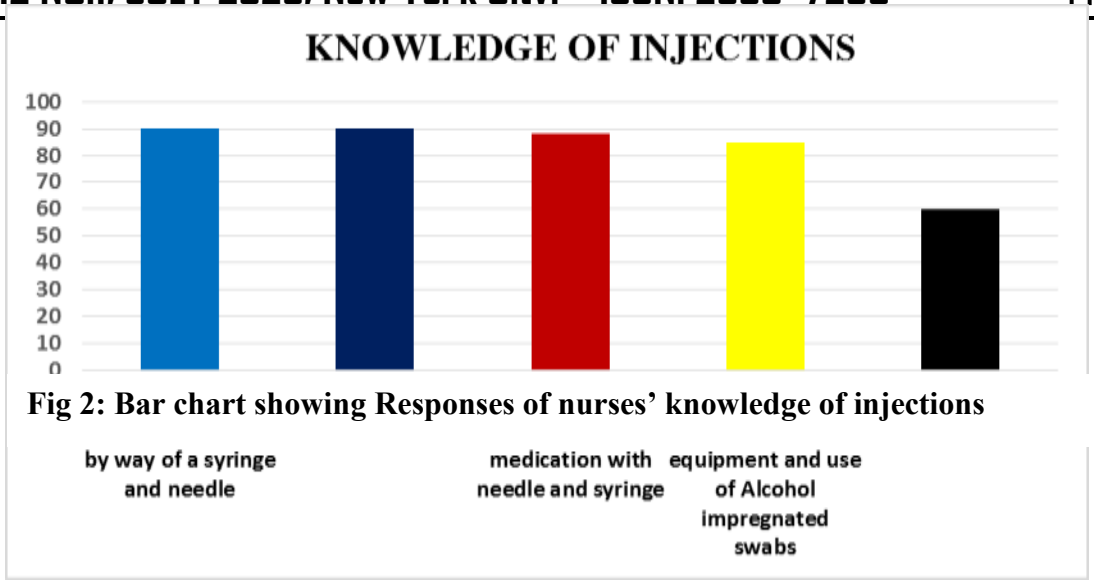

Fig 2: Bar chart showing Responses of nurses' knowledge of injections

Injection practice. 100 percent of the nurse respondents know that injection is a dose of medicine given by way of syringe and needle and also administer to patients with appropriate needle sizes. 98 percent knew the proper way of drawing up medication and 94 percent always use protective equipment and alcohol impregnated swabs. However, only about 67 percent answered yes to knowledge and use of band aid to check allergies. In answer to the research question, it is established from the responses that a very high percentage of the nurses had very high level knowledge of injections.

Research Question Two

What is nurses' knowledge of nature of injection practices at secondary health facility in Akwa Ibom North-East Senatorial District?

Table 2: Responses of nurses' knowledge of nature of injections practice

	Nature of injections	Yes	No
1	Injection is a parenteral drug administration that does not involve absorption in the digestive tract	88(98%)	2(2%)
2	It is absorbed rapidly	85(95%)	5(5%)
3	It is used to give a wide variety of different medications	88(98%)	2(2%)
4	Different types of injections are among others intravenous, intramuscular, subcutaneous, intraosseous and intra-dermal	90(100%)	0(0%)
5	It is used for prevention, diagnosis and treatment of various illnesses	89(99%)	1(1%)

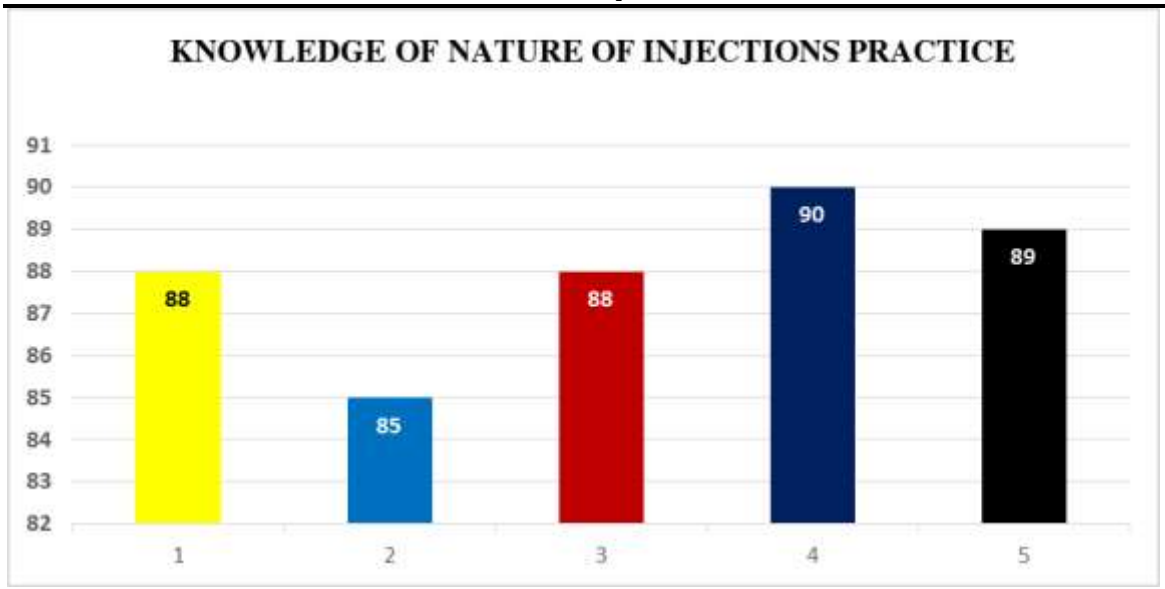

Table 2 show that overwhelming majority of the nurses indicated good knowledge of nature of injection practices. 100 percent of the nurse respondents knew among others that different types of injections are intravenous, intramuscular, subcutaneous, intra-osseous and intra-dermal. That injection is given for a wide variety of different medications 98 percent; for prevention, diagnosis and treatment of various illnesses 99 percent and that injections administered does not involve absorption in the digestive tract (98%).

Fig. 3: Bar chart showing Responses of nurses' knowledge of nature of injections practice

Test of Hypotheses

Hypothesis 1

There is no significant relationship between nurses' knowledge of injections and practice of injection safety at secondary health facility in Akwa Ibom North-East Senatorial District.

Table 3: Chi-square analysis of association between nurses' knowledge of injection and practice of injection safety

			Safe injection practice			df	X^2	P-value	Decision at 0.05 alpha level
			Yes	No	Total	1	12.49	0.021	Significant
Knowledge of injections	Yes	n	82	2	84				
		%	97.6%	2.4%	100.0%				
	No	n	4	2	6				
		%	66.7%	33.3%	100.0%				
Total		n	86	4	90				
		%	95.6%	4.4%	100.0%				

Table 3 presents the results of testing hypothesis 1. It indicates that the null hypothesis is rejected since the X^2 value of 12.49 is significant at the computed p-value of 0.021 less than 0.05 alpha level of significance at 1 degree of freedom ($X^2 = 12.49$, df = 1, p-value = 0.021 ≤ 0.05). Therefore, it is acknowledged that safe injection techniques and injection expertise are significantly correlated.

Hypothesis 2

There is no significant relationship between nurses' knowledge of nature of injections and practice of injection safety at secondary health facilities in Akwa Ibom North-East Senatorial District.

Table 4: Chi-square analysis of knowledge of nature of association between nurses' knowledge of injection and practice of injection safety

			Safe injection practice			df	X^2	P-value	Decision at 0.05 alpha level
			Yes	No	Total	1	12.08	0.001	Significant
Knowledge of nature of injections	Yes	n	82	1	83				
		%	98.8%	1.2%	00.0%				
	No	n	4	3	7				
		%	7.1%	42.9%	100.0%				
Total		n	86	4	90				
		%	95.6%	4.4%	100.0%				

Table 4.9 reveals that the X^2 value of 12.08 is significant at a calculated p-value of 0.001, less than the 0.05 alpha level of significance at 1 degree of freedom. As a result, the null hypothesis is rejected, and the alternative hypothesis is accepted: there is a strong association between understanding of injection nature and safe injection techniques.

CONCLUSION

The result from the studies determined that there's no significant relationship between nurses' knowledge of nature of injections and practice of injection safety at secondary health facilities in Akwa Ibom North-East Senatorial District. It also showed that there is a strong association between understanding of injection nature and safe injection techniques.

RECOMMENDATION

- Clinical instructors work in tandem with nurses and hospital administrators to promote and guarantee the posting of universal precaution guidelines and the availability of injection safety materials and resources.

- **It is important to set up support supervision and logistics to guarantee that health professionals follow accepted protocols.**

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