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INCIDENCE OF INJECTION INJURIES ON GLUTEAL AND SHOULDER REGIONS OF PATIENTS ATTENDING MURTALA MUHAMMAD SPECIALIST HOSPITAL KANO

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ABSTRACT

There are incidences of gluteal and shoulder region injuries due to injections and information about the frequencies of these incidences are not properly documented. Hence the aim of this research is to assess the incidence of intramuscular injection injuries on gluteal and shoulder regions of patients attending Murtala Muhammad specialist hospital Kano. Two hundred (200) patients both male and female were selected from Murtala Muhammad specialist Hospital, Kano. Whose medication was through intramuscular injection, using cross sectional technique. The age range of the participants was 0-1yrs, 1-5yrs, 6-10yrs, 11-15yrs, 16-20yrs, 20yrs and above. A research pro-forma was used to collect the relevant data, including demographic and clinical variables of the participants. The data were expressed as frequency and percentage, and Pearson correlation was used to determine relationship between variables. The result of this study showed that (38) patients were affected with the incidence of intramuscular injection injuries on gluteal and shoulder region of patients attending Murtala Muhammad specialist hospital, Kano. With 20 male patients and 18 female patients. And the most common incidence observed in this study was inflammation with 31 affected patients and injection abscess with 7 affected patients. It was observed that there is no significant relationship between sex and effect and also sex and indication of injection injury. In conclusion, proper administration technique should always be used when administering intramuscular injections, locating the safe landmarks in both shoulder and gluteal region should be implemented as well.

Keywords: Intramuscular injection, injury, gluteal region, shoulder region

INTRODUCTION

Intramuscular injection is one of the parenteral drug administration sites, this injection method is used to deliver drugs to a larger muscle mass. Gluteus maximus, gluteus medius, gluteus minimus, rectus femoris, vastus lateralis, and deltoid and triceps muscles are commonly used for intramuscular injection [1]. Injection injuries to gluteal and shoulder regions affects the individuals activity of daily living which may necessitate proper intervention, this can be achieved if the detail of the incidence of injection injuries to gluteal and shoulder region are properly documented.

Shoulder injury related to injection is a preventable occurrence caused by the injection into the shoulder capsule rather than the deltoid muscle.

The deltoid is a triangular muscle that originate from the lateral one-third of the clavicle, the superior surface of the acromion process, and the lower lip of the posterior border of the scapular spine, and it converges into the deltoid tuberosity near middle of the humerus. The axillary nerve is formed from the fifth and sixth cervical roots and is a terminal branch emerging from the posterior cord of the brachial plexus. The axillary nerve descends anteriorlaterally, anterior to subscapularis muscle. It then passes through the quadrilateral space at the inferior border of the subscapularis muscle, where it subsequently forms medial and lateral fasciculi and ultimately anterior and posterior branches. Its anterior branch winds around the posterior surface of the surgical neck of the humerus, sending

branches to the anterior and middle heads of the deltoid and a small patch of skin over its lower part. The posterior branch supplies the teres minor and the posterior aspect of the deltoid. It descends around the posterior border of the deltoid to form the upper lateral cutaneous nerve of the arm, which innervates the skin and fascia over the lower deltoid and lateral head of tricep [2-3].

The gluteal region consists of a group of three muscles namely: the gluteus maximus, gluteus medius and gluteus minimus. The three muscles originate from the ileum and sacrum and insert on the femur. Sciatic nerve, is the most common nerve injured by intramuscular injection especially in children, the elderly and underweight patients. The sciatic nerve is formed from the anterior and posterior divisions of the L4, L5, S1 and S2 spinal nerves and the anterior division of S3 spinal nerve. The anterior division form the tibial division of the sciatic nerve, while the posterior divisions form the peroneal division. The divisions usually run together in the pelvis and then pass beneath the piriformis muscle, with the peroneal division lying lateral to the tibial division [4].

Materials and Methods

Study design

Cross sectional study approach

Study area

This study was carried out in Murtala Muhammad specialist hospital Kano.

Study population

Male and Female patients attending Murtala Muhammad specialist hospital Kano, with intramuscular injection

medication. 200 patients were selected using random sampling method.

Sampling technique

Simple random sampling will be used in which all subjects will be given equal chance to participate.

Inclusion criteria

Only patients whose treatments are by intramuscular injections.

Exclusion criteria

Patients whose treatments are not by intramuscular injections.

Sample size determination

Sample size was determined using the formula developed by Cochran [5] as shown below;

$$n = \frac{Z^2 pq}{d^2}$$

Where

n = desired sample size

Z = confidence level (How confident the actual mean falls within your confidence interval) 1.96 at 95%

p = prevalence/proportion of standard deviation (How much variance is expected in the responses) 0.11 pair 13 enen 3D [6],

q = 1 – p,

d = degree of precision/ margin of error which is 5%.

$$n = \frac{Z^2 pq}{d^2} = \frac{(1.96)^2 \times 0.11 \times (1 - 0.11)}{(0.05)^2} = 150$$

The minimum sample size needed for the study was 150

Ethical Approval

Ethical approval was sought from the Ministry of Health and letter of introduction from the Head of Anatomy Department, Faculty of Basic Medical Science, Yusuf Maitama Sule University Kano, Informed consents were also sought from the participants.

Method

Questionnaires were printed for all individuals that included age, sex, site of injection, effect, indication of injection (feature of injury).

Statistical Analysis

The data were expressed as frequency and percentages. Pearson correlation was used to quantify the relationship between variables. The analyses were carried out using SPSS version 20. P<0.05 was considered as level of significance.

RESULT

Table 1 shows Frequency of the participants' sex. The sex of the participants was observed to be 42.5% that is 85 out of 200 for male participants and 57.5% that is 115 out of 200 for female participants.

Table 1: Frequency distribution of the participant’s sex

Variable (sex)	Frequency	Percentage(%)
MALE	85	42.5
FEMALE	115	57.5

Variable (age)	Frequency	Percentage(%)
0-1	47	23.5

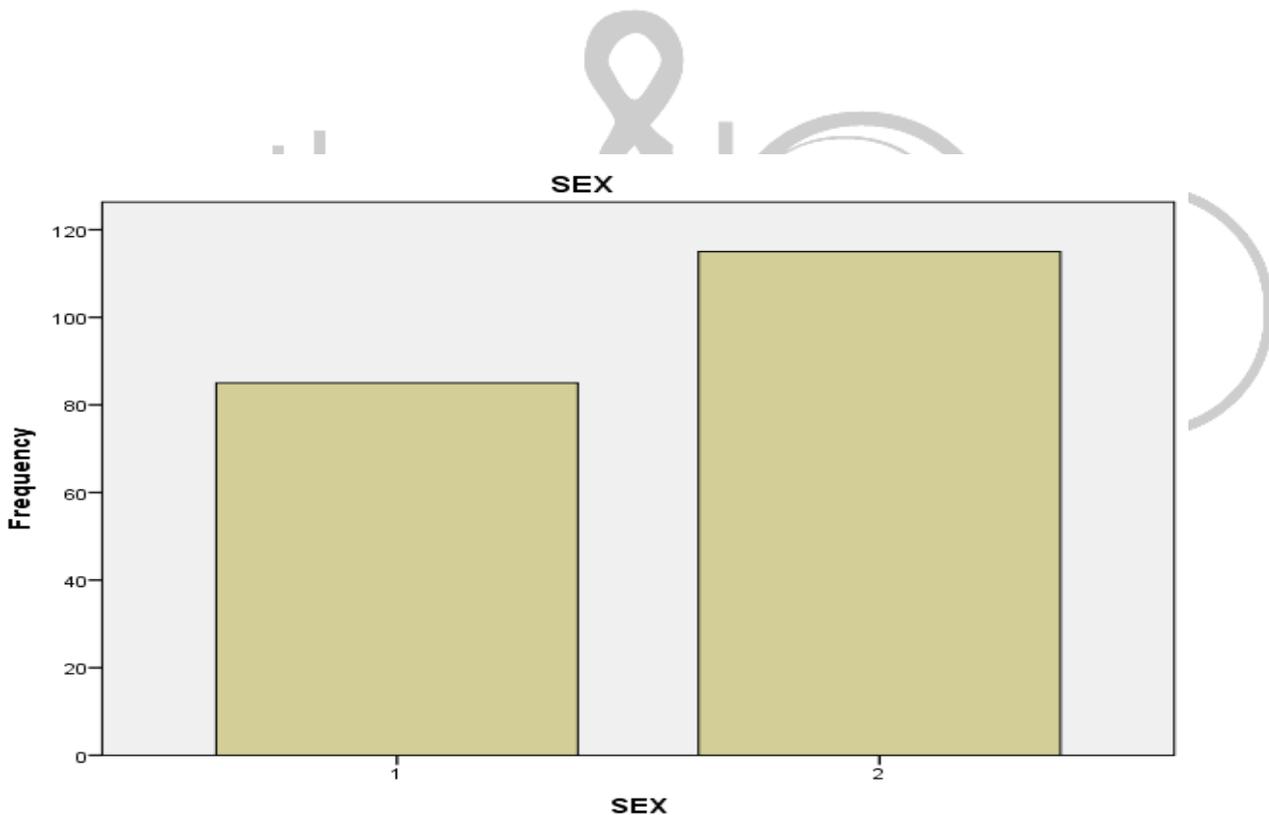


Figure 1 shows Frequency distribution of the participant’s age (years). The participants age is in range of 0-1yrs ,1-5yrs, 6-10yrs, 11-15yrs, 16-20yrs, 21yrs Above which are 47(23.5%), 36 (18%), 32(16%), 20(10%), 14(7%), 51(25.5%) respectively.

Table 4.2: distribution of participant's

1-5	36	18.0	Frequency the age
6-10	32	16.0	
11-15	20	10.0	
16-20	14	7.0	
21-Above	51	25.5	

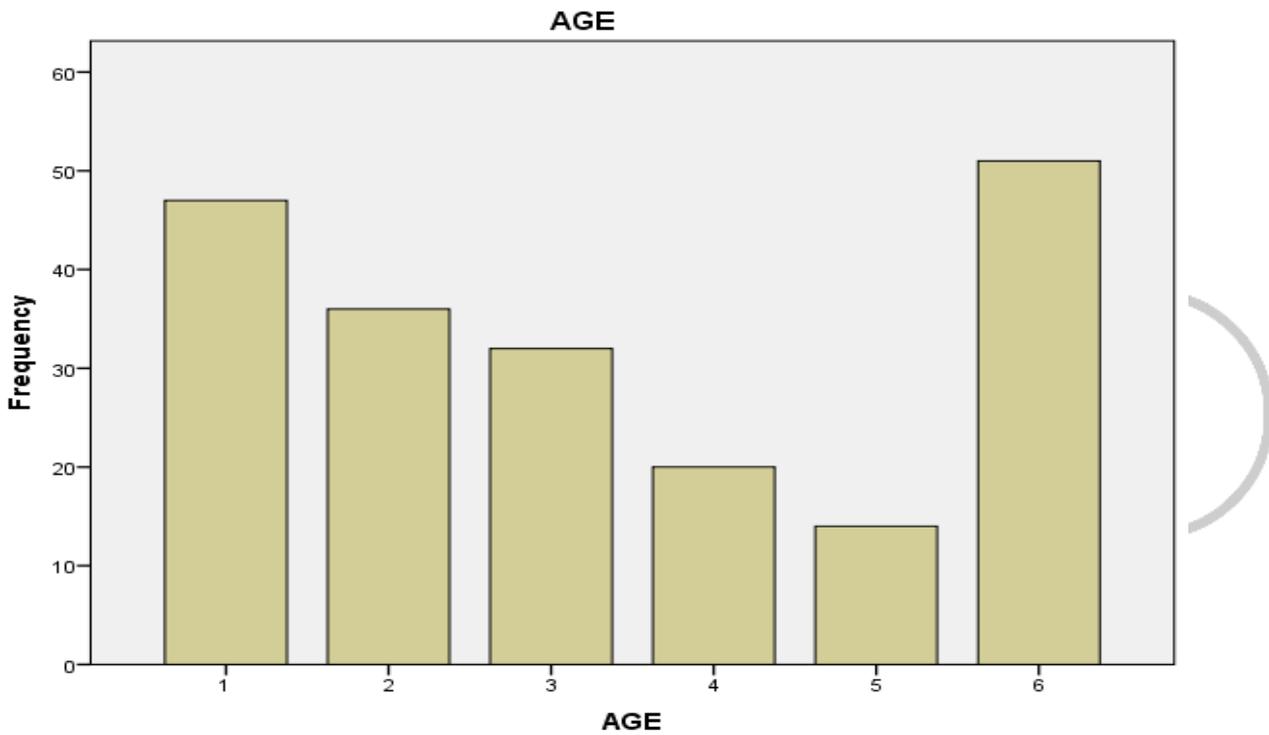


Figure 2 shows frequency distribution of the site of injection. SSR is 13(6.5%) out of 200, SRL shows 34(17%) out of 200, GRR is 70(35%) out of 200, GRL is 54(27.0%) out of 200, GRB is 29(14.5%) out of 200.

Variable(SOI)	Frequency	Percentage(%)
Valid	SRR	13
	SRL	34
	GRR	70
Variable(effect)	GRL	54
	GRB	29
	Frequency	Percentage(%)

Table 2: of the effect of	NO	162	81.0	Frequency distribution injection injuries
	YES	38	19.0	

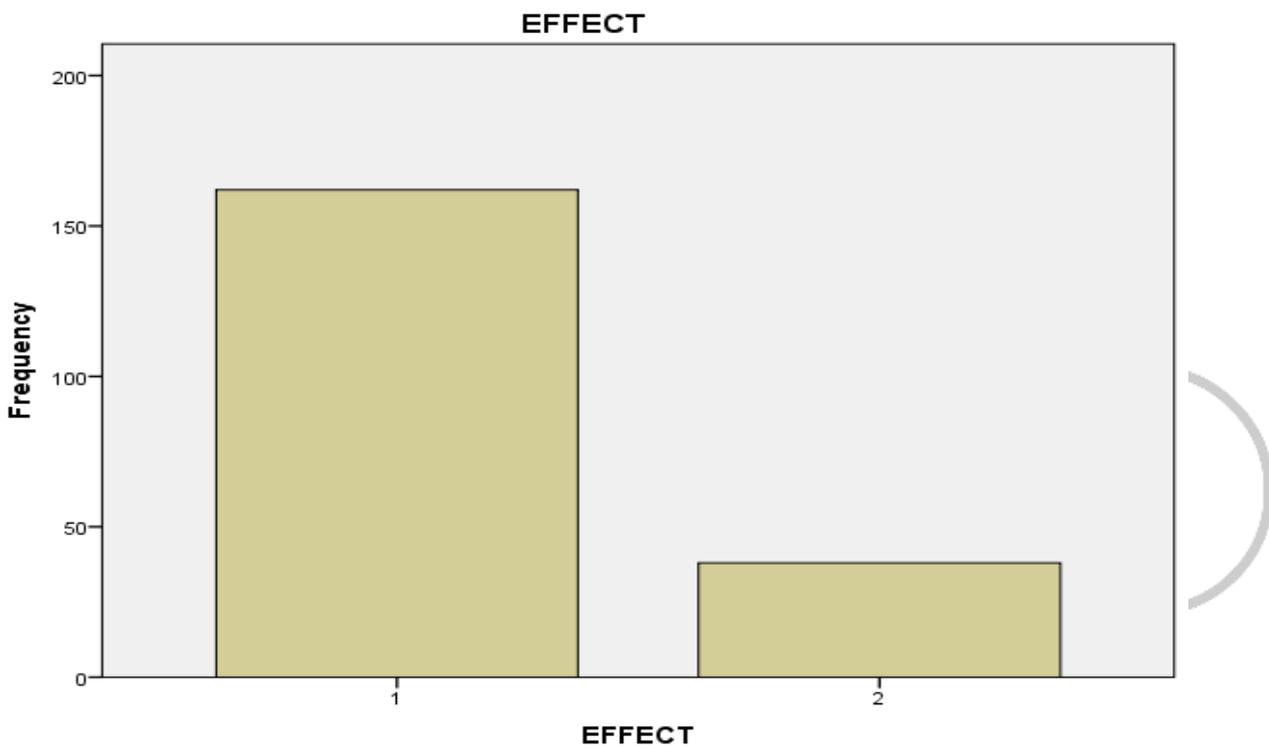


Figure 3 shows frequency distribution of the indication of injection injuries, 162(81%) shows no indication of injection injuries, whereas 31(15.5%) shows inflammation and 7(3.5%) shows injection Abscess.

Table 3: Frequency distribution of the IOI

Variable(IOI)		Frequency	Percentage(%)
Valid	None	162	81.0

Inflamation	31	15.5
Abscess	7	3.5

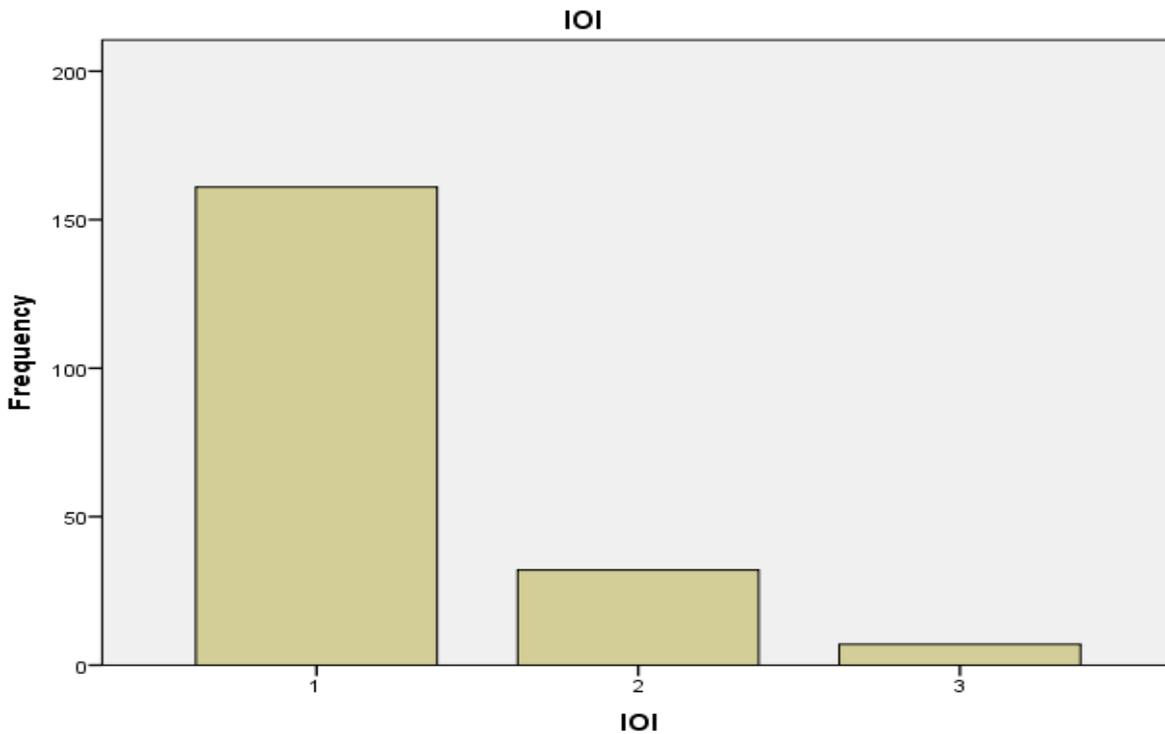


Figure 4 shows relationship between sex and effect. It was observed that there is no significant relationship ($p < 0.160$) ($X^2 = 1.971$) between sex and effect. Therefore, both male and female have almost the same value 20 & 18 respectively.

Table 4: Relationship between sex and effect

			Effect		X ²	p-value
			NO	YES		
SEX	MALE	Count	65	20	1.971	0.160
		Expected Count	68.9	16.2		
	FEMALE	Count	97	18		
		Expected Count	93.1	21.8		

Table 5: Relationship between sex and indication of injection injuries(IOI)

	SEX		IOI			X ²	P-VALUE
			None	Inflamation	Abscess		
DISCUSSION This study assessed the incidence of injection injuries on gluteal and shoulder region of patients attending Murtala Muhammad specialist Hospital. The incidence of injection injuries on gluteal and shoulder region found in the present study is 19%. Among the 38 affected patients, 20 of them are male while the remaining 18 are female, showing that both male and female are at risk of getting intramuscular injection injuries. Intramuscular injections can lead to local infectious complications, such as abscesses, skin necrosis, or intra-articular infections. It can rarely progress to generalized sepsis and multi-organ failure [7]. According to the Boston collaborative drug surveillance program in 1978, 46% of the hospitalized patients received at least one IM injection during their stay and among them only 0.4% (48 of 12134 patients) developed one of the following complications: abscess, indurations, hematoma and bleeding. The most common complication among them was abscess formation. The bacteriological cultures revealed that 66% of cases were monomicrobial, 9% poly microbial, and among them 33% were <i>S. aureus</i> [8]. In this study patients with inflammation report that the inflammation was mild	MALE	Count	65	16	4	1.649	0.438
		Expected Count	68.4	13.6	3.0		
	FEMALE	Count	96	16	3		
		Expected Count	92.6	18.4	4.0		

few hours or a day, while patient with injection abscess underwent surgery followed by dressing in the dressing room of the hospital. IM injections need proper assessment of the patient, asepsis, and appropriate techniques to prevent the rare but dangerous complications. The Center for disease Control issued clinical guidelines in 2010 showing the importance of hand washing in the prevention of infections among clinicians and healthcare providers. Early initiation of appropriate antibiotics and prompt surgical intervention is required for better outcomes in these patients.

CONCLUSION

The present study established the baseline data for the incidence of injection injuries on gluteal and shoulder region of patients attending Murtala Muhammad specialist hospital, Kano. This incidences can be prevented by always using a safe land marks and injection given by trained health care personnel.

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