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Original Research Paper

Nursing

ASSESSMENT OF KNOWLEDGE REGARDING ADMINISTRATION OF INJECTABLES WITH Z – TRACK TECHNIQUE AMONG STAFF NURSES

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ABSTRACT

It was felt necessary to conduct this study to compare the effects on pain and drug leakage of the standard intramuscular injection method and the "Z-track technique," which is claimed to be helpful in this regard.

Objectives: 1. To assess the knowledge regarding administration of injectables with Z - Track technique among staff nurses. To associate the knowledge score with the selected demographic variables

Method and Material: The study design research desig descriptive research design was group pre descriptive evaluatory approach. Population was staff nurses in selected hospital wardha.

Sample size 200 .

Result: The above table shows that (1.5%) had poor level of knowledge, (7.5%) were having average level of knowledge, (50.5%) were having good knowledge,(40.5%)were having very good knowledge score and (0%) were having excellent level of knowledge. The minimum score was 3 and the maximum score was 101, the mean score for the test was 14.46 ±3.297 and mean percentage of knowledge was 57.84.The finding of the study show that mean and standard deviation was 14.46and 3.297respectively. And also the mean percentage of knowledge score of staff nurseswas 57.84 respectively. The level of significance scale observed for the study was $P<0.05$.

KEYWORDS : knowledge; z-track technique intramuscular injection.

Introduction

When a medication is injected directly into muscle, it is called an intramuscular injection (IM). The Z-track method is a type of IM injection technique used to prevent tracking (leakage) of the medication into the subcutaneous tissue (underneath the skin). During the procedure, skin and tissue are pulled and held firmly while a long needle is inserted into the muscle. After the medication is injected, the skin and tissue are released. When you insert a needle into the tissues, it leaves a very small hole, or track. Small amounts of medication can sometimes leabackwards through this track and be absorbed into other tissues. Pulling the skin and tissue before the injection causes the needle track to take the shape of the letter "Z," which gives the procedure its name.

This zigzag track line is what prevents medication from leakinsg from the muscle into surrounding tissue. The procedure is usually administered by a nurse or doctor. In some cases, you may be instructed how to perform Z-track injections on yourself at home. You may also need the help of a caregiver, friend or family member to administer the injection. Side effects can include swelling and injection discomfort. However, Z-track injection is usually less painful than a traditional IM injection.Magnesium sulphate ($MgSC_4$) is the agent most commonly used for treatment of eclampsia and prophylaxis of eclampsia in patients with severe pre-eclampsia. It is usually given by either the intramuscular or intravenous routes. The intramuscular regimen is most commonly a 4g intravenous loading dose, immediately followed by 10g intramuscularly and then by 5g intramuscularly every 4 hours in alternating buttocks. The intravenous regimen is given as a 4g dose, followed by a maintenance infusion of 1 to 2 g/h by controlled infusion pump.

After administration, about 40% of plasma magnesium is protein bound. The unbound magnesium ion diffuses into the extra vascular-extracellular space, into bone, and across the placenta and fatal membranes and into the fetes and amniotic fluid. In pregnant women, apparent volumes of distribution usually reach constant values between the third and fourth hours after administration, and range from 0.250 to 0.442 L/kg. Magnesium is almost exclusively excreted in the urine, with 90% of the dose excreted during the first 24 hours after an intravenous infusion of $MgSO_4$. The pharmacokinetic profile of $MgSO_4$ after intravenous administration can be described by a 2-compartment model with a rapid distribution (α) phase, followed by a relative slow β phase of elimination.

The clinical effect and toxicity of $MgSO_4$ can be linked to its concentration in plasma. A concentration of 1.8 to 3.0 mmol/L has been suggested for treatment of eclamptic convulsions. The actual magnesium dose and concentrastion needed for prophylaxis has never been estimated. Maternal toxicity is rare when $MgSO_4$is carefully administered and monitored.

The first warning of impending toxicity in the mother is loss of the patellar reflex at plasma concentrations between 3.5 and 5 mmol/L. Respiratory paralysis occurs at 5 to 6.5 mmol/L. Cardiac conduction is altered at greater than 7.5 mmol/L, and cardiac arrest can be expected when concentrations of magnesium exceed 12.5 mmol/L. Careful attention to the monitoring guidelines can prevent toxicity. Deep tendon reflexes, respiratory rate, urine output and serum concentrations are the most commonly followed variables.

In this review, we will outline the currently available knowledge of the pharmacokinetics of $MgSO_4$ and its clinical usage for women with pre-eclampsia and eclampsia.

Eclampsia is the occurrence of convulsions or Coma in-patients of Preeclampsia. It is estimated that every year eclampsia is associated with about 50,000 maternal deaths worldwide, most of which occur in developing countries. The first and foremost principle of management of eclampsia is control of convulsions. Various drugs and regimes have been advocated for management of eclampsia.

A variety of nursing theorist refers to comfort as a basic client need for which nursing care is delivered. The context of comfort is the umbrella under which pain and pain management options are viewed.

1. Procedural pain is an important source of discomfort for clients in nursing care settings. Among others, intramuscular injection is common procedure that nurses frequently carry out which causes pain and distress to the recipient. Pain management during invasive procedure is a challenge to the direct care

providers.

2. Intra muscular injection is common yet a complex technique used to deliver medication deep into the large muscles of the body. Intra muscular injection route provides faster drug absorption than the subcutaneous route because the muscles have greater vascularity. There are several factors which influences person experiences of pain during Intra muscular injection for example anxiety, culture, age, gender, and expectation of pain relief. These factors may increase or decrease the experience of pain during Intra muscular injection. Also intramuscular injection are frequently referred to as to as a 'basic skill', but involve a complex series of consideration and decision relating to volume of injective, medication to be given , technique, site selection , equipments also[1].
3. Providing pain relief is considered a most basic human right, so it is the responsibility of the nurse to use most effective approach to pain control. Nurses are ethically and legally responsible for managing pain and reliving suffering. Effective pain management not only reduces physical discomfort, but also improves quality of life.
4. A nurse at a primary care clinic received an order to administer penicillin G benzathine injections (4 ml) intramuscular
5. Into deep muscle every 3 week stoamale patient with a BMI of 55. Since this patient was in a wheelchair and immobile due to his obesity, she was limited to giving this injection.

Problem statement:

" assessment of knowledge regarding administration of injectables with z - track technique among staff nurses".

Objectives

1 To asss the knowledge regarding administration of injectables with Z - Track technique among staff nurses.
2. To associate the knowledge score with the selected demographic variables.

Methodology

Research design- Descriptive research design **Setting of study-** Selected rural hospital wardha.

Sample -staff nurses in selected hospital**.**
Sample size - 200
Sampling techniques- Non probability convenience sampling

Tool- The tool will be consisting of Section A – Socio demographic variables and Section B- knowledge questions regarding Z-Track technique

DISCRIPTION OF TOOL: - Data collection tool contain items on the following aspects

1. The tool will be consisting of Section A – Socio demographic variables and
2. Section B- knowledge questions regarding Z-Track technique.

INCLUSION CRITERIA:

1. Staff nurses who are willing to participate in the study.
2. Staff nurses who are available at the time of data collection.

EXCLUSION CRITERIA:

1. Those who have attended similar type of this study .

Result

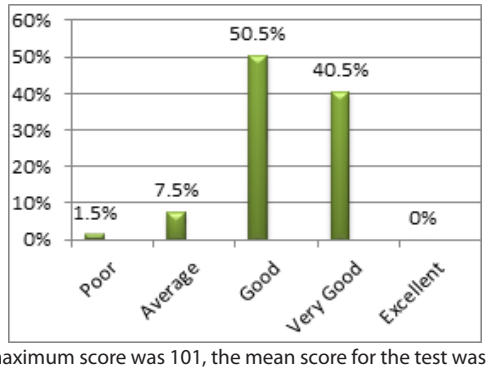
This section deals with the assessment of knowledge regarding z-track technique intramascular injection. The level of knowledge is divided under following

sheadings:

Level of sknowledge score	Score	Percentage score	Pretest Knowledge score	
			Frequency	Percentage
Poor	0-5	0-20%	3	1.5%
Average	6-10	21-40%	15	7.5%
Good	11-15	41-60%	101	50.5%
Very good	16-20	61-80%	81	40.5%
Excellent	21-25	81-100%	0	0%
Minimum score	3			
sMaximum score	20			
Mean score	14. 46.±3.297			
Mean Percentage	57.84			

The above table shows that (1.5%) had poor level of knowledge, (7.5%) were having average level of knowledge, (50.5%) were having good level of knowledge,(40.5%)were having very good knowledge scoreand (0%) were having excellent level of knowledge. The minimum score was 3 and the maximum score was 101, the mean score for the test was 14.46 ±3.297 and mean percentage of knowledge was 57.84

***Graph III* :Distribution of sample with regard to knowledge regarding intramuscular injection Z Track technique among staff nurses in sele**



the maximum score was 101, the mean score for the test was 14.46 ±3.297 and mean percentage of knowledge was 57.84.

is more than 0.05. Hence it is interpreted that the age in years of staff is not associated with their knowledge scores.

n=200

Age (yrs.)	Number of adults	Mean knowledge score	F-value	p-value
20-30 years	140	14.27±.3.280	1.400	0.244
31-40years	49	14.27±.3.280		NS, p›0.05
41-50 years	10	16.40±2.591		
50 years above	1	16.00±0.246		

in years of staff is not associated with their knowledge scores.

n=200

Table V shows the association of knowledge score with the age in years of staff. The 'F'-value was calculated1,400 at 5% level of significance with df (3, 196). Also the calculated 'p'-value is 0.244 which is more than 0.05. Hence it is interpreted that the age in years of staff is not associated with their knowledge scores.

Discussion

The findings of the study were discussed with reference to the objectives stated in chapter I and with the findings of the other studies in this section. The present study undertaken was " assessment of knowledge regarding injectables Z-Track technique among staff nurses." the knowledge regarding injectables with Z-Track technique among staff nurses."

The findings can be utilized to prepare module and educate nurses regarding intramuscular

Z-Track technique injectables. .Nurse educator can educate to the staff and nursing student to improve the awareness and knowledge regarding inject able Z-Track technique.

Conclusion

The above table shows that (1.5%) had poor level of knowledge, (7.5%) were having average level of knowledge, (50.5%) were having good level of knowledge,(40.5%)were having very good knowledge score and (0%) were having excellent level of knowledge. The minimum score was 3 and the maximum score was 101, the mean score for the test was 14.46 ±ss3.297 and mean percentage of knowledge was 57.84.

There was a significant association of knowledge score in inject able z- track techniqueknowledge of staff nurses regarding injection Z-track technique among staff nurses.

There was a no significant association of knowledge score is related to age, qualification, and designation of staff nurses.for dealing with imparting knowledge regarding Z-Track technique inject ableand

Recommendation

Recommendations for further study Based on the findings of the study the following recommendations could be made-

- " Assessment of knowledge regarding administration of injectables with Z-Track technique among staff nurses.
- A similar study can be undertaken for large sample to generalize the findings.
- A comparative study can be carried out on the knowledge regarding intramuscular and Z- track technique inject able among staff nurses.

Study can be conducted at hospital or community settings among the nurses developing danger effect after administration of injectables like magnesium sulphate, iron etc education can provide and follow up can be done to assess their knowledge which will give more effectiveness to the nurses and individuals and the community health worker.

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