

Do Nurses Use the Ventrogluteal Site in Administering Intramuscular Injections? A Pilot Study

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Abstract: In Intramuscular (IM) injection, the drug is delivered to the deep muscle tissue and IM injection has a place in parenteral drug administration. In recent nursing literature, IM injection to the Ventrogluteal (VG) site has been recommended because it is less painful, it is far from bony projections, there are no nerves or blood vessels in the site and the possibility of delivering the drug to subcutaneous tissue is low and there is sufficient muscular tissue, making it a site which is easy to locate. This was a descriptive study. The research sample consisted of 30 nurses who were performing duties as nurses during the time of the study, who accepted to take part in the study, and who were working in clinics where injections were given. In collecting research data, a form prepared by the researchers in accordance with the literature was used. This form consisted of 12 questions on the nurses' socio-demographic and professional life and characteristics and the frequency with which they practiced IM injections and the sites which they used. With regard to the IM injection sites most used by the nurses, most (90.0%) chose the DG site as a first choice for the administration of IM injections, while more than half (60%) placed the VG site as a fifth choice (final choice). In line with the conclusions of this study, more attention should be paid in nursing training to the topic of IM injection to the VG site, demonstrations should be conducted for students using models, and at the work practice stage, students should certainly be allowed to practice in real patients.

Keywords: Ventrogluteal site, Intramuscular injection, Nurse

I. Introduction

In all institutions where nurses provide health care services, they have extremely important roles in such areas as preparing drugs in a suitable way, administering them safely to patients, giving instruction to patients and their relatives with regard to the drugs, and following patients' reactions to the drugs [1-4]. Nurses have dependent, semi-dependent and independent roles. Administration of drugs is one of their dependent roles [5].

Injections are one of the commonest of nursing practices, and intramuscular (IM) injections are one of the most commonly used methods of administering injections [6-9]. In IM injection, the drug is delivered to the deep muscle tissue and IM injection has a place in parenteral drug administration [4,8].

There are five sites at which IM injection can be performed. These are the dorsogluteal (DG) site, the ventrogluteal (VG) site, the vastus lateralis muscle, the deltoid muscle and the rectus femoris muscle [10-13]. The reason why the deltoid, vastus lateralis and VG sites are advocated for IM injection is that they are far from major nerves and blood vessels [14]. Injections administered to the DG site can encounter the sciatic nerve and result in drop foot, pain, and temporary or permanent paralysis, and therefore IM injection to the DG site is not recommended [1,6]. In recent nursing literature, IM injection to the VG site has been recommended because it is less painful [4,15,16], it is far from bony projections, there are no nerves or blood vessels in the site and the possibility of delivering the drug to subcutaneous tissue is low [10,14,17-20], and there is sufficient muscular tissue, making it a site which is easy to locate [13]. In the light of this information, we wanted to determine the status of the use of the VG site for IM injection.

II. Aim

The aim of this study was to examine which injection sites were used by nurses in administering IM injections, and the status of use of the VG site.

III. Material and Method

This was a descriptive study. It was conducted between July and October 2016 at a 53-bed government hospital in the Eastern Anatolia region of Turkey. The population of the study was the 35 nurses working at the hospital between 18 July and 31 October 2016. The research sample consisted of 30 nurses who were performing duties as nurses during the time of the study, who accepted to take part in the study, and who were working in clinics where injections were given. The research sample consisted of 85.71% of the population.

3.1. Research Data and Data Collection

In collecting research data, a form prepared by the researchers in accordance with the literature was used [1,9,21]. This form consisted of 12 questions on the nurses' socio-demographic and professional life and characteristics and the frequency with which they gave IM injections and the sites which they used.

In order that the nurses should not affect the others' responses, the researchers collected data alone on a one-to-one interview basis in a quiet room. Data collection took approximately eight minutes.

3.2. Data Evaluation

Analysis of the data obtained in the study was carried out using the Statistical Package for Social Science (SPSS) 16.0. Descriptive statistics, means, standard deviations and minimum and maximum values were used to express continuous variables, and categorical variables were expressed with numerical and percentage values.

3.3. Research Ethics

Written permission to conduct the study was obtained from the Scientific Ethics Committee of Manisa Celal Bayar University, and the Ethics Committee of the General Secretariat of the Public Hospitals Association of Muş Province in Turkey. The aim of the research and the procedures were explained to the participants and their oral permission was obtained, together with written permission using an Informed Voluntary Consent form.

IV. Results

The limited number of participants (30 nurses) and the performance of the study at a single hospital mean that the study cannot be generalized.

4.1. Nurses' Descriptive and Professional Characteristics

Table 1: Distribution of Nurses by Descriptive Characteristics (n=30)

Descriptive characteristics	n	%
Gender		
Female	15	50.0
Male	15	50.0
Age		
18-23	9	30.0
24-29	18	60.0
30-34	3	10.0
Mean age	$\bar{X} \pm SD = 25.03 \pm 3.011$	Min= 19 Max= 31
Marital status		
Married	12	40.0
Unmarried	18	60.0
Education level		
Health vocational high school	5	16.7
Two-year degree	4	13.3
Full degree	21	70.0
Mean no of years working	$\bar{X} \pm SD = 2.75 \pm 1.633$	Min= 1 Max= 8
Clinic		
Inpatient services	19	63.3
Intensive care	4	13.3
Emergency service	7	23.3
Mean no of years working in that clinic	$\bar{X} \pm SD = 1.82 \pm 1.013$	Min= 1 Max= 4

Table 1 shows the distribution of the nurses included in the study according to their descriptive characteristics. It was found that 50% (n=15) of the nurses were female and 50% (n=15) were male, and their mean age was $\bar{X} \pm SD = 25.03 \pm 3.011$ (min= 19, max= 31) years. It was determined that 60% of the nurses (n=18) were single, 16.7% (n=5) were graduates of health vocational high schools and 70% (n=21) were university graduates. The mean number of years working in the nursing profession was $\bar{X} \pm SD = 2.75 \pm 1.633$ (min= 1, max= 8). It was established that 63.3% (n=19) of the nurses worked in the inpatients services, and the mean number of years working in the clinics where they were currently working was $\bar{X} \pm SD = 1.82 \pm 1.013$ (min= 1, max= 4).

4.2. Nurses' Administration of IM Injections

Table 2: Distribution of Characteristics Concerning Intramuscular Injection (n=30)

I have had in-service training on intramuscular injection	n	%
Yes	8	26.7
No	22	73.3
Sources of information in professional life*		
Internet	20	66.7
Other nurses	15	50.0
Academic books	14	46.7
In-service training	11	36.7
Periodical journals	4	13.3
Number of intramuscular injections given per day		
1-3	16	53.3
4-10	6	20.0
11 or more	8	26.7
Daily mean score of intramuscular injections administered	$\bar{X} \pm SD = 15.37 \pm 23.375$ Min= 1 Max= 70	

*More than one choice was marked.

It was reported that 73.3% of the nurses (n=22) had received no in-service training in IM injection. Sources of professional information obtained after qualification were, in order, 66.7% (n=20) from the internet, 50% (n=15) from colleagues, 46.7% (n=14) from academic books, 36.7% (n=11) from in-service training, and 13.3% (n=4) from periodical journals (Table 2). The number of IM injections administered daily by 53.3% (n=16) of the nurses was 1-3, and the mean number of IM injections administered daily was $\bar{X} \pm SD = 15.37 \pm 23.375$ (min= 1, max= 70) (Table 2).

4.3. Nurses' IM Injection Administration Sites

Table 3: Distribution by Ranking of Use of Intramuscular Injection Sites (n=30)

Injection sites*	1st choice		2nd choice		3rd choice		4th choice		5th choice	
	No	%	No	%	No	%	No	%	No	%
Deltoid	-	-	6	20.0	9	30.0	10	33.3	5	16.7
Ventrogluteal	2	6.7	3	10.0	2	6.7	5	16.7	18	60.0
Dorsogluteal	27	90.0	2	6.7	1	3.3	-	-	-	-
Vastus lateralis muscle	1	3.3	12	40.0	10	33.3	7	23.3	-	-
Rectus femoris muscle	-	-	7	23.3	8	26.7	8	26.7	7	23.3

*Percentages of the rows.

Table 3 shows the distribution of the IM injection sites most frequently used by the nurses. It was found that 90% (n=27) of the nurses gave the DG site as a first preference, 40.0% (n=12) the vastus lateralis muscle as second preference, 26.7% (n=8) the rectus femoris muscle as a third preference and 26.7% (n=8) the rectus femoris muscle as a fourth preference; 33.3% (n=10) gave the deltoid muscle as a fourth preference, and 60.0% (n=18) gave the VG site as a fifth preference.

Table 4: Distribution of Injection Sites Not Used (n=30)

IM injection sites not used	n	%
Deltoid	28	93.3
Rectus femoris	24	80.0
Ventrogluteal	8	26.7
Reasons for not giving injections at the VG site*		
I don't know how to identify the site	15	50.0
I don't know how to do it	7	23.3
Identification is difficult	6	20.0
The patients don't want it	6	20.0
I've had no training	3	10.0
I've never come across it	2	6.7

*More than one choice was marked.

Reasons why the nurses did not use the VG site for IM injection were, in order, not knowing how to identify the site (50.0%, n=15), not knowing how to administer an injection at this site (23.3%, n=7), thinking that it was difficult to find the place (20.0%, n=6), the patient not wanting to have an injection at this site (20%, n=6), having had no instruction on the VG site (10.0%, n=3), and having never encountered injections at the VG site (6.7%, n=2) (Table 4).

V. Discussion

5.1. Administration of IM Injection by Nurses

IM injection is a procedure included in parenteral applications which is widely used for treatment and protection, in which the drug is delivered to the deep muscle tissue^[6,8]. It was found that few of the nurses (26.7%) had received in-service training on IM injection after qualifying. Similar to this study, Şanlıalp (2013) found that two thirds of nurses had not taken part in in-service training on this topic^[22]. Training on this topic should be given by experts who are experienced and who have up-to-date information. More than half of the nurses (66.7%) stated that they obtained most of the information in their professional lives after basic training from the internet. Nurses would be expected to obtain theoretical and practical information by reading evidence-based studies and the latest nursing textbooks. However, it has been seen that this is not the case. In a study by Walsh and Brophy (2011) conducted with 264 nurses, it was found that only 15.2% of the nurses updated their knowledge of IM injection according to the recommendations of the literature^[21]. In a study by Tuğrul and Denat (2014) conducted with 85 nurses evaluating their knowledge, views and practices on the administration of injections to the ventrogluteal site, the nurses were asked where they had obtained their latest information on IM injection, and 85.9% answered that they obtained it from the school where they graduated, 7.1% from in-service training, 3.6% from courses or symposiums, and 3.6% from books or from the internet^[9]. The conclusions of these studies are similar to those of the present study. It is of great importance that up-to-date information should be obtained from evidence-based studies published in periodicals, articles or up-to-date nursing textbooks rather than a source of unknown reliability such as the internet, and that the knowledge obtained from these sources should be applied in professional life.

It was seen in the study that the mean daily number of IM injections administered by the nurses was $\bar{X} \pm SD = 15.37 \pm 23.375$, and that 70.0% of the nurses gave 1-10 injections a day. In a study by Gülnar and Özveren (2016) conducted with 81 nurses to evaluate the effect of planned training on administering intramuscular injections to the ventrogluteal site, it was seen that 55.6% of the nurses gave 0-9 IM injections a week^[23]. According to these results, the nurses in our study were giving IM injections more frequently, and therefore they would be expected to have a higher level of knowledge on the administration of IM injections.

5.2. Nurses' IM Injection Sites

With regard to the IM injection sites most used by the nurses, most (90.0%) chose the DG site as a first choice for the administration of IM injections, while more than half (60%) placed the VG site as a fifth choice. It was seen that the deltoid muscle, the vastus lateralis muscle and the rectus femoris muscle were less frequently administered as a first choice. These findings show that the VG site is less frequently used when giving IM injections. It has been found in many studies that the DG site was preferred or given as a first choice as an IM injection site by nurses, and that the least chosen site was the VG site^[1,9,21,23,24]. In recent nursing literature, the VG site has been accepted as the safest site for IM injection^[9,11,13,15,17,21,25], and it is recommended that IM injections should be administered to this site^[1,4,10,26].

However, it has been found in studies conducted in the past five years in Turkey that nurses most frequently choose the DG site for IM injection^[1,9,19,23,25]. The choice of site for IM injection depends on many factors, and nurses in a clinical environment have frequently stated a preference for the DG site^[25]. In this study, the IM injection sites least used by the nurses were, in order, the deltoid, rectus femoris and VG sites. The reasons given for not using the VG site, which is known to be the safest site for IM injection, were not knowing how to identify the site (50.0%, n=15), not knowing how to administer an injection at this site (23.3%), thinking that it was difficult to find the place (20.0%), the patient not wanting to have an injection at this site (20%), having had no instruction on the VG site (10.0%), and having never encountered injections at the VG site (6.7%). It was seen that most nurses in this study did not have adequate knowledge or skill concerning the VG injection site, and it is thought that they were not encouraged in nursing training to use the VG site for IM injection. Until ten years ago, nursing textbooks gave the DG site as the place for injections^[27,28], and this is still the case in some textbooks^[6], and it is thought that the use of the DG site in nursing training and in practical demonstrations by nursing teachers may be reasons arising from nursing training.

Also, nurses not keeping up with the most up-to-date literature on IM injection, not carrying out adequate personal development with regard to acquiring adequate knowledge and skills^[9], and not wanting to perform injections at this site^[29,30] may be reasons arising from the nurses themselves.

VI. Conclusion and Recommendations

When the nurses participating in the study ranked the use of IM injection sites, they placed the DG site first and the VG site last. The reason for placing the VG site last was that most nurses did not have the requisite knowledge and skills. As a result of this study, a study of the effect on knowledge and skills of planned

instruction regarding the use of the ventrogluteal site for the administration of intramuscular injections is planned, and the results of this study will be shared as a scientific paper in the shortest time.

In line with the conclusions of this study, more attention should be paid in nursing training to the topic of IM injection to the VG site, demonstrations should be conducted for students using models, and at the work practice stage, students should certainly be allowed to practice in real patients. In-service training on the use of the VG site should be given to nurses working in the field, and their use of this practice should be supported. Nurses working in the field should be encouraged and supported in reading journals, periodicals and articles to keep up with up-to-date topics after qualification. When nurses are administering IM injections to the VG site, they should be observed by nursing experts and their shortcomings should be corrected.

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