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Investigation of Turkish nurses frequency and knowledge of administration of intramuscular injections to the ventrogluteal site: Results from questionnaires

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ABSTRACT

Background: Intramuscular injection is important in the administration of parenteral medication and is a frequently-performed nursing responsibility.
Objective: The objective of this study was to identify the frequency of use of the ventrogluteal site and the level of nurses' knowledge of administering an intramuscular injection to this site.
Design: A descriptive cross-sectional study was conducted of nurses working in four hospitals (n = 362). Data collection tools included a 12 item sociodemographic questionnaire and a 24 item questionnaire on knowledge of the ventrogluteal site for intramuscular injection.
Findings: 17.1% of participants reported using the VG site frequently in intramuscular injections. On the other hand, 35.9% reported that they do not use the VG site in intramuscular injections just because they are not used to giving injections on this site. Level of knowledge of ventrogluteal site was also limited with the mean score of correct answers from 24 questions being 14.37.
Conclusion: It was found in the study that nurses' knowledge of the ventrogluteal site was limited, and they are not preferentially using the ventrogluteal site for intramuscular injections to adults even though it is recommended in recent nursing literature.

1. Introduction

Intramuscular (IM) injection; that is, delivering medication to the patient into the muscle, began to be practiced in the late 1960s with the delivery of antibiotics through this route and has been a routine part of nursing practice ever since (Nicoll and Hesby, 2002). Today, IM injection is important in the administration of parenteral medication and is a frequently-performed nursing responsibility (Güneş et al., 2008). However, the World Health Organization has estimated that of ~12 billon injections administered globally every year, 50% are unsafely administered (Kim and Park, 2014). If IM injection is not performed carefully and in conformity with the correct technique, it can cause such serious complications as abscesses, cellulite, tissue necrosis, granuloma, muscular fibrosis and contracture, intravascular injection, hematoma and nerve damage (Mayer and Romain, 2001; Nicoll and Hesby, 2002; Malkin, 2008; Kara et al., 2015). As high a proportion as 86% of damage to the sciatic nerve has been attributed to injection (Kadıoğlu, 2004). The sciatic nerve is the most frequently affected nerve, especially in children, the elderly and underweight patients (Kadıoğlu, 2004; Kim and Park, 2014). Injection injury of the sciatic nerve has been recognized for many years and remains a persistent global problem that affects patients in both wealthy and poorer healthcare systems (Kim and Park, 2014).

Choice of site for IM injection depends on many factors, and it has been reported that the DG site is generally preferred in clinical practice (Kaya et al., 2012; Gulnar and Çalışkan, 2014; Tuğrul and Denat, 2014; Gulnar and Özveren, 2016). However, researchers have reported that because the DG site is close to neurovascular structure and to the anatomical region where the sciatic nerve is located, and because the thickness of the subcutaneous tissue at this site is greater, the risk of complications at this site is high (Nicoll and Hesby, 2002; Zaybak et al., 2007; Kilic et al., 2014; Kara et al., 2015; Coskun et al., 2016). It has

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also been stated that the anatomical location of the sciatic nerve can vary from one individual to another, and the imaginary line used to determine the site can often be wrong, and injections to the DG site always carry a risk of injury especially to nerves (Nicoll and Hesby, 2002; Potter and Perry, 2009; Kilic et al., 2014).

Recently, evidence-based practices and recommendations in the nursing literature are in favor of the VG site rather than the DG site when IM injections in gluteal site are administered (Walsh and Brophy, 2011; Ogston, 2014; Kara et al., 2015; Coskun et al., 2016). The VG site is the safest injection site for adults and children over the age of 7 months because it has no nerves or large blood vessels, it is far away from bone protrusions, the possibility of delivering the medication to subcutaneous tissue is low, the location is easy to determine anatomically, and it has a large area of muscle (Greenway, 2004; Cook and Murtagh, 2006; Zaybak et al., 2007; Güneş et al., 2008; Potter and Perry, 2009; Taylor et al., 2011; Coskun et al., 2016; Güneş et al., 2016). Studies have shown that there is less pain and bleeding in injections to the VG site than in those to the DG site (Moharreri et al., 2007; Güneş et al., 2013). In addition, Walsh and Brophy (2011) reported in their study that they found such complications as discomfort, infection, abscess, nerve injury and fibrosis more frequently in the injections which nurses give in the DG site in comparison to those they give on the VG site. Another advantage of using the VG site is that the position in which the patient is placed is easy (Greenway, 2004; Kaya et al., 2012; Güneş et al., 2013), and that contamination with feces and urine is less likely than with the DG site (Freitag et al., 2015).

In face of developments in theoretical knowledge of IM injection, it is becoming apparent that many of the complications in Turkey and elsewhere are preventable (Güneş et al., 2008). Although the VG site has been recommended for use in IM injections for many years because of its advantages, it is still rarely used by nurses (Wynaden et al., 2006, 2015; Walsh and Brophy, 2011; Yavuz and Karabacak, 2011; Tuğrul and Denat, 2014; Gulnar and Çalışkan, 2014; Freitag et al., 2015; Gulnar and Özveren, 2016). The reasons for this include the small anatomical structure of the VG site, difficulty is site detection and the worry that it could cause damage to the patient and not being used to applying injections on this site (Greenway, 2004; Donaldson and Green, 2005; Tuğrul and Denat, 2014). Moreover, it is reported that nurses do not receive further education on performing intramuscular injections outside of the training they receive in their associate and bachelor's degree programs. Another point is that the DG site is suggested as a suitable location for IM injections in all the textbooks published as of 1960 (Yavuz and Karabacak, 2011; Gulnar and Özveren, 2016). However, recent textbooks on Fundamentals of Nursing recommend the use of VG site as the first choice in IM injections (Craven and Hirnle, 2009; Potter and Perry, 2009; Taylor et al., 2011; Gulnar and Çalışkan, 2014; Coskun et al., 2016), and accordingly, courses on Fundamentals of Nursing at some schools in Turkey have recently suggested the use of the VG site in IM injection performances while not mentioning the use of the DG site (Gulnar and Çalışkan, 2014). In the literature review, however, a very limited number of studies has been found on the frequency of use of the VG site by nurses and their knowledge of the administration in Turkey (Güneş et al., 2009; Tuğrul and Denat, 2014; Gulnar and Çalışkan, 2014; Kara et al., 2015; Gulnar and Özveren, 2016). The present study aimed to evaluate nurses' level of knowledge and the frequency of the use of the VG site.

2. Methods

2.1. Design

The frequency of use of the VG site and nurses' knowledge level of administering an IM injection to this site were measured using a descriptive cross-sectional design with a written questionnaire.

2.2. Study Participants

The study population consisted of 6146 nurses in 28 Turkish Ministry of Health hospitals and three university hospitals located in Izmir, the third biggest city of Turkey. The number of nurses needed for the sample was found to be 362 through the use of the Epi lnfo™Statcalc program. The study sample consisted of voluntary nurses who worked in clinics offering adult patient care, while nurses working in the pediatric departments were excluded from the study. Since Ministry of Health hospitals and university hospitals are similar to each other data was collected from nurses working in two university and two government hospitals that were chosen using the table of random numbers. The confidence interval of the sample selected was 95%.

2.3. The Instruments

The data of the study were collected using the form developed by the researchers in line with the literature (Rodger and King, 2000; Hogston and Simpson, 2002; Nicoll and Hesby, 2002; Hunter, 2008; Kozier and Berman, 2008; Potter and Perry, 2009; Dinç, 2011; Taylor et al., 2011; Gulnar and Çalışkan, 2014) and the questionnaire consisting of 24 items on the VG site which was developed by Gulnar and Çalışkan (2014).

The nursing information form consists of 12 questions about nurses' sociodemographic and professional characteristics. The form included such personal details as age, marital status, educational level, work experience and the number of night shifts worked per month as well as questions about IM injection and IM injection sites.

The questionnaire on the level of knowledge concerning the Ventrogluteal Site for Intramuscular Injection was originally developed by Gulnar and Çalışkan (2014). It consists of 24 items on the VG site and its use. Twelve of the statements in this questionnaire are true and 12 are false, and nurses are asked to respond to the statements by choosing “True” or “False”. Correct answers given by the nurses were assigned one point while incorrect answers were assessed as 0. The internal consistency reliability coefficient for the questionnaire was found to be alpha = 0.84.

2.4. Data Collection

Nurses who volunteered to take part in the study completed self-administered questionnaires between July 2015 and January 2016. Those working in the selected hospitals were invited to participate in the survey on a voluntary basis upon permission from the head of the hospitals and the nurse managers. After choosing the hospitals, the researchers handed out the questionnaires to all nurses working in the hospitals. Each of the participants was given a questionnaire form together with an envelope and a letter explaining the complete research study, the instructions for filling out the questionnaire and written assurance stating participation was voluntary. The questionnaire forms included no information on identification of the participants. After filling out the questionnaires, the participants put them in envelopes, sealed the envelopes, and gave them to nurse manager. Following this, the researchers received the questionnaires from the nurse manager. Returning the questionnaire in a completed form was considered as consent to participate in the study.

2.5. Ethical Considerations

Approval was obtained from the Ege University College of Nursing Ethics Committee in Izmir before data collection was started. Hospital administrators provided written approval to conduct the study, and no invasive procedures were planned for human beings during the study period. Verbal consent was obtained from all of the nurses who agreed to participate after they were informed about the study content. Permission was obtained from Gulnar and Calıskan to use the