

Is The Level Of Nurses' Knowledge Concerning The Usage Of Ventrogluteal And Dorsogluteal Sites In Intramuscular Injections?

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Introduction

IM injection, which was first administered by the doctors and then the nurses with the start of the use of penicillin in the 1940s, is a frequently administered nursing application.

The frequency of this application does not indicate that all practitioners administer in a reliable and valid manner.



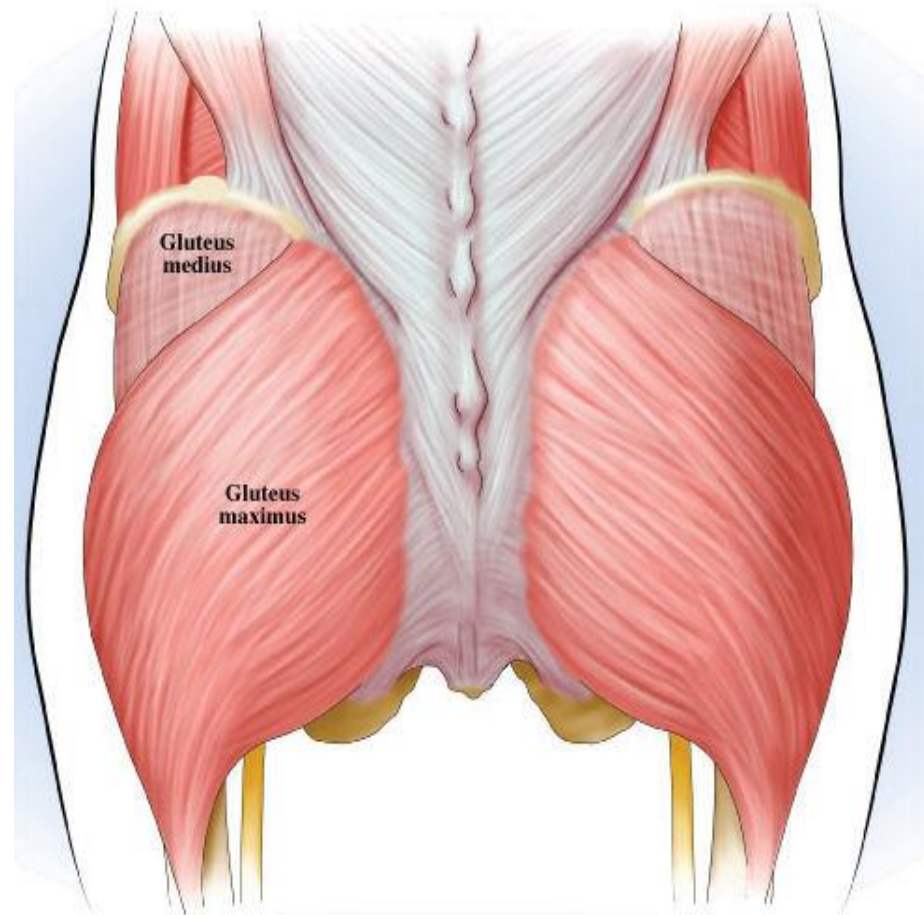
Introduction

- Since the 1920s, the health professionals have been aware of the fact the IM injection, which seems to be easy to be administered, may lead to preventable complications, *including abscess, cellulitis, granuloma, necrosis, contracture, hematoma, fibrosis, infection, tissue trauma, pain and injury to bones, blood vessels and nerves* .



Introduction

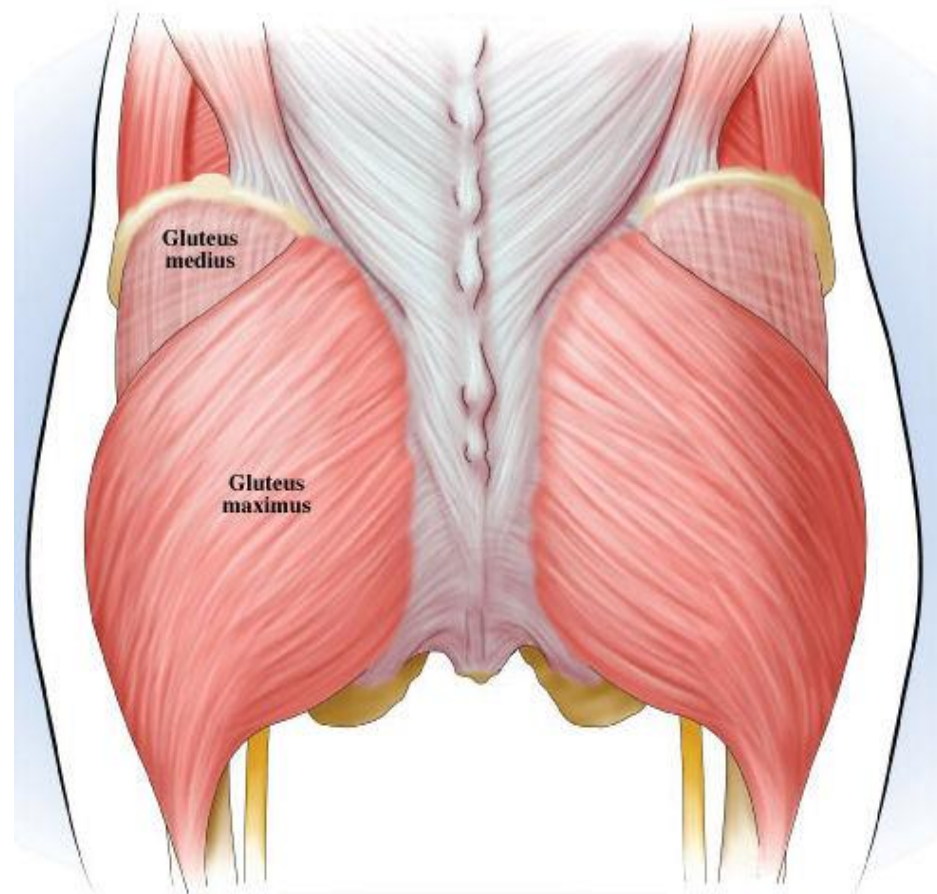
- Traditionally, the nurses are *inclined to use the DG site* to give IM injection.



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Introduction

- Besides, *the age, professional experience and knowledge levels of the nurses on complications* such as nerve damage may influence the selection of the IM injection site.



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Purpose

This study has been conducted in order to evaluate the knowledge levels of the nurses **on the usage of the VG site,** which has been suggested by the scholars **and the DG site,** which may cause complications when IM injection is given.





Methods

Design and setting

This descriptive and cross-sectional study .

It was conducted at a university hospital, between April and June 2014.

Methods

Participants

283 nurses out of the 690 nurses working at the hospital agreed to participate in the research.



Methods

Instrument

The data collection form was constructed by the researchers *after the review of the relevant literature and 20 questions* were asked to the participants *during one-to-one interviews*.



Methods

Instrument

The first six questions were on the demographic characteristics of the participants and the latter 14 questions, which had the answers of “yes”, “no” and “I do not know” included statements to measure the knowledge levels of the participants on the usage of VG and DG sites.

Statistical Analysis

- *Mean, standard deviation, number and percentage* were used for data analysis and *chi-square test* was used to compare the data and the variables.
- *$p < 0, 05$* was considered statistically meaningful and *SPSS 15.0* packet program was used for statistical analysis.

Results

Table 1 demonstrates the general characteristics of the participants.

The average old of the 283 nurses that participated in this study is $29 \pm 7, 6$.

80.2% of the nurses are university graduates whereas 2.5% are graduates of vocational high schools.

52% of them had a professional experience between 1 and 5 years and 78.4% of the nurses stated that they did not receive training and education on IM injection in the form of congress, in-service training etc.

Results

Table 1 General characteristics of the participants

| | | n | % |
|--|-------------------------|-----------|------|
| Graduation Status | Vocational High School | 7 | 2,5 |
| | Associate Degree | 16 | 5,7 |
| | Undergraduate Degree | 227 | 80,2 |
| | Graduate degree | 33 | 11,7 |
| | Professional Experience | 1-5 years | 147 |
| | 6-10 years | 28 | 9,9 |
| | 11 years and above | 108 | 38,2 |
| Clinic that the participants worked at | Surgical Clinics | 141 | 49,8 |
| | Internal clinics | 142 | 50,1 |
| Further education after the graduation | Yes | 61 | 21,6 |
| | No | 222 | 78,4 |

Results

Table 2 demonstrates the distribution of the answers of the participants to the use of VG and DG sites when giving an IM injection.

Results

- Most of the participants gave the correct answer to 12 expressions but the percentage of the wrong answers to the statements “*dorsogluteal site is used since there are less blood vessels at the site*” was 56,2% (n:159)

| Expressions* | | n | % |
|--|----------------|-----|------|
| 1. <u>Dorsogluteal</u> site is used since there are less blood vessels | <u>Correct</u> | 159 | 56,2 |
| | <u>Wrong</u> | 108 | 38,2 |
| | I do not know | 16 | 5,7 |
| 2. Ventrogluteal site is used since subcutaneous adipose tissue is thinner | <u>Correct</u> | 148 | 52,3 |
| | <u>Wrong</u> | 78 | 27,6 |
| | Bilmiyorum | 57 | 20,1 |
| | I do not know | | |
| 3. <u>Dorsogluteal</u> site is used since there is no probability of damage to sciatic nerves. | <u>Correct</u> | 126 | 44,5 |
| | <u>Wrong</u> | 150 | 53 |
| | I do not know | 7 | 2,5 |
| 4. Ventrogluteal site is used since it is the safest site for an IM injection | <u>Correct</u> | 171 | 60,4 |
| | <u>Wrong</u> | 74 | 26,1 |
| | I do not know | 38 | 13,4 |
| 5. Ventrogluteal site is used since it leads to the least number of complications | <u>Correct</u> | 177 | 62,5 |
| | <u>Wrong</u> | 64 | 22,6 |
| | I do not know | 42 | 14,8 |
| 6. <u>Dorsogluteal</u> site is used since it is the closest site to the superior <u>gluteal</u> artery | <u>Correct</u> | 43 | 15,2 |
| | <u>Wrong</u> | 173 | 61,1 |
| | I do not know | 67 | 23,7 |
| 7. Ventrogluteal site is used since the drug can be injected directly to the muscles | <u>Correct</u> | 191 | 67,5 |
| | <u>Wrong</u> | 49 | 17,3 |
| | I do not know | 43 | 15,2 |

Results

- *“dorsogluteal site is used since the determination of the application site is based on imaginary lines”* was 51,9% (n:147)

| | | | |
|--|----------------|------------|-------------|
| 8. <u>Dorsogluteal</u> site is used since the site is innervated by major nerves | <u>Correct</u> | 52 | 18,4 |
| | Wrong | 189 | 66,8 |
| | I do not know | 42 | 14,8 |
| 9. <u>Dorsogluteal</u> site is used since major blood vessels supply blood to the site | <u>Correct</u> | 63 | 22,3 |
| | Wrong | 172 | 60,8 |
| | I do not know | 48 | 17 |
| 10. <u>Ventrogluteal</u> site is used since it is anatomically larger | <u>Correct</u> | 100 | 35,3 |
| | Wrong | 136 | 48,1 |
| | I do not know | 47 | 16,6 |
| 11. <u>Ventrogluteal</u> site is used since it causes less pain to the patient during and after the injection | <u>Correct</u> | 128 | 45,2 |
| | Wrong | 102 | 36 |
| | I do not know | 53 | 18,7 |
| 12. <u>Ventrogluteal</u> site is used since it is the safest site for normal weight or slightly overweight patients | <u>Correct</u> | 190 | 67,1 |
| | Wrong | 59 | 20,8 |
| | I do not know | 34 | 12 |
| 13. <u>Dorsogluteal</u> site is used since the determination of the application site is based on imaginary lines. | <u>Correct</u> | 147 | 51,9 |
| | Wrong | 112 | 39,6 |
| | I do not know | 24 | 8,5 |
| 14. <u>Ventrogluteal</u> site is used since there is no compulsory positioning so that the patient can be positioned with good comfort | <u>Correct</u> | 195 | 68,9 |
| | Wrong | 58 | 20,5 |
| | I do not know | 30 | 10,6 |

* Correct answers are underlined

Results

Table 3 shows the evaluation of the nurses' answers to the expressions above and their demographic characteristics, including education levels, professional experience and education received after graduation.

Results

The findings show that the percentage of those that gave correct answers to the expressions of “*ventrogluteal site is used since subcutaneous adipose tissue is thinner*”, was 45, 3% (n:67),

Table 3 Evaluation of the nurses' knowledge of the VG and DG sites when giving an IM injection and Their Education Levels, Professional Experience And Education After Graduation

| Expressions* | | Graduation Status | | | | P | Professional Experience | | | P | Further education after the graduation | | P |
|---|---------------|------------------------|------------------|----------------------|-----------------|-------|-------------------------|------------|--------------------|-------|--|-------------|-------|
| | | Vocational High School | Associate Degree | Undergraduate Degree | Graduate degree | | 1-5 Years | 6-10 Years | 11 years and above | | Yes | No | |
| | | | | | | | | | | | | | |
| 1. Dorsogluteal site is used since there are less blood vessels | Correct | 3 1,9 ** | 13 8,2 | 126 79,2 | 17 10,7 | >0,05 | 81 50,9 | 14 8,8 | 64 40,3 | >0,05 | 37 23,3 | 122 76,7 | >0,05 |
| | Wrong | 4 3,7 | 2 1,9 | 86 79,6 | 16 14,8 | | 54 50 | 14 13 | 40 37 | | 22 20,4 | 86 79,6 | |
| | I do not know | 0 | 1 6,3 | 15 93,8 | 0 | | 12 75 | 0 | 4 25 | | 2 12,5 | 14 87,5 | |
| 2. Ventrogluteal site is used since subcutaneous adipose tissue is thinner. | Correct | 5 3,4 | 8 5,4 | 112 75,7 | 23 15,5 | >0,05 | 62 41,9 | 19 12,8 | 67 45,3 | <0,05 | 30 20,3 | 118 79,7 | >0,05 |
| | Wrong | 1 1,3 | 6 7,7 | 66 84,6 | 5 8,8 | | 50 64,1 | 2 2,6 | 26 33,3 | | 21 26,9 | 5 73,1 | |
| | I do not know | 1 1,8 | 2 3,5 | 49 86 | 5 8,8 | | 35 61,4 | 7 12,3 | 15 26,3 | | 10 17,5 | 47 82,5 | |

Results

- *“ventrogluteal site is used since the drug can be injected directly to the muscles”* and *“dorsogluteal site is used since the determination of the application site is based on imaginary lines”* were 44% (n:84) and 35, 7% (n:40), respectively. These nurses had a professional experience of 11 years and above.
- The relationship between professional experience and the correct answers to these expressions was found statistically meaningful ($p < 0, 05$).

| | | | | | | | | | |
|--|---------------|-----|-----|------|------|------|------|------|-------|
| 7. Ventrogluteal site is used since the drug can be injected directly to the muscles | Correct | 5 | 11 | 150 | 25 | 84 | 23 | 84 | <0,05 |
| | Wrong | 2,6 | 5,8 | 78,5 | 13,1 | 7,44 | 12 | 44 | |
| | I do not know | 1 | 1 | 41 | 6 | 30 | 3 | 16 | |
| | | 2 | 2 | 83,7 | 12,2 | 61,2 | 6,1 | 32,7 | |
| 8. Dorsogluteal site is used since the site is innervated by major nerves | Correct | 2,3 | 9,3 | 83,7 | 4,7 | 76,7 | 4,7 | 18,6 | >0,05 |
| | Wrong | 4 | 5 | 40 | 3 | 26 | 5 | 21 | |
| | I do not know | 7,7 | 9,6 | 76,9 | 5,8 | 50 | 9,6 | 40,4 | |
| | | 2 | 7 | 152 | 28 | 97 | 20 | 72 | |
| 9. Dorsogluteal site is used since major blood vessels supply blood to the site | Correct | 1,1 | 3,7 | 80,4 | 14,8 | 51,3 | 10,6 | 38,1 | >0,05 |
| | Wrong | 1 | 4 | 35 | 2 | 24 | 3 | 15 | |
| | I do not know | 2,4 | 9,5 | 83,3 | 4,8 | 57,1 | 7,1 | 35,7 | |
| | | 2 | 5 | 48 | 8 | 34 | 4 | 25 | |
| 10. Ventrogluteal site is used since it is anatomically larger | Correct | 3,2 | 7,9 | 76,2 | 12,7 | 54 | 6,3 | 39,7 | >0,05 |
| | Wrong | 4 | 8 | 140 | 20 | 84 | 21 | 67 | |
| | I do not know | 2,3 | 4,7 | 81,4 | 11,6 | 48,8 | 12,2 | 39 | |
| | | 1 | 3 | 39 | 5 | 29 | 3 | 16 | |
| 11. Ventrogluteal site is used since it causes less pain to the patient during and after the injection | Correct | 2,1 | 6,3 | 81,3 | 10,4 | 60,4 | 6,3 | 33,3 | >0,05 |
| | Wrong | 4 | 5 | 84 | 7 | 50 | 9 | 41 | |
| | I do not know | 4 | 5 | 84 | 7 | 50 | 9 | 41 | |
| | | 2 | 9 | 104 | 21 | 68 | 12 | 56 | |
| 12. Ventrogluteal site is used since it is the safest site for normal weight or slightly overweight patients | Correct | 1,5 | 6,6 | 76,5 | 15,4 | 50 | 8,8 | 41,2 | >0,05 |
| | Wrong | 1 | 2 | 39 | 5 | 29 | 7 | 11 | |
| | I do not know | 2,1 | 4,3 | 83 | 10,6 | 61,7 | 14,9 | 23,4 | |
| | | 3 | 6 | 104 | 15 | 61 | 15 | 52 | |
| 13. Dorsogluteal site is used since the determination of the application site is based on imaginary lines. | Correct | 2,3 | 4,7 | 81,3 | 11,7 | 47,7 | 11,7 | 40,6 | >0,05 |
| | Wrong | 3 | 6 | 79 | 14 | 57 | 8 | 37 | |
| | I do not know | 2,9 | 5,9 | 77,5 | 13,7 | 55,9 | 7,8 | 36,3 | |
| | | 1 | 4 | 44 | 4 | 29 | 5 | 19 | |
| 14. Dorsogluteal site is used since the determination of the application site is based on imaginary lines. | Correct | 1,9 | 7,5 | 83 | 7,5 | 54,7 | 9,4 | 35,8 | >0,05 |
| | Wrong | 5 | 10 | 150 | 25 | 93 | 20 | 77 | |
| | I do not know | 2,6 | 5,3 | 78,9 | 13,2 | 48,9 | 10,5 | 40,5 | |
| | | 1 | 5 | 47 | 6 | 30 | 5 | 24 | |
| 15. Dorsogluteal site is used since the determination of the application site is based on imaginary lines. | Correct | 1,7 | 8,5 | 79,7 | 10,2 | 50,8 | 8,5 | 40,7 | >0,05 |
| | Wrong | 1 | 1 | 30 | 2 | 24 | 3 | 7 | |
| | I do not know | 2,9 | 2,9 | 88,2 | 5,9 | 70,6 | 8,8 | 20,6 | |
| | | 3 | 11 | 111 | 22 | 70 | 13 | 64 | |
| 16. Dorsogluteal site is used since the determination of the application site is based on imaginary lines. | Correct | 2 | 7,5 | 75,5 | 15 | 47,6 | 8,8 | 43,5 | <0,05 |
| | Wrong | 3 | 4 | 95 | 10 | 57 | 15 | 40 | |
| | I do not know | 2,7 | 3,6 | 84,8 | 8,9 | 50,9 | 13,4 | 35,7 | |
| | | 1 | 1 | 21 | 1 | 20 | 0 | 4 | |
| | | 4,2 | 4,2 | 87,5 | 4,2 | 83,3 | | 16,7 | |

Results

- The study also found that 80.4% of the participants that gave correct answer to the statement

Dorsogluteal site is used since the site is innervated by major nerves”

had bachelor’s degree. The relationship between correct answer for this expression and the education level was found statistically significant ($p < 0, 05$).

| | | | | | | | | | | | |
|---|---------------|-----|-----|------|------|-------|------|------|------|------|-------|
| 7. <u>Ventrogluteal</u> site is used since the drug can be injected directly to the muscles | Correct | 5 | 11 | 150 | 25 | 84 | 23 | 84 | 44 | 147 | |
| | Wrong | 2,6 | 5,8 | 78,5 | 13,1 | %44 | 12 | 44 | 23 | 77 | |
| | I do not know | 1 | 1 | 41 | 6 | >0,05 | 30 | 3 | 16 | 10 | <0,05 |
| | | 2 | 2 | 83,7 | 12,2 | | 61,2 | 6,1 | 32,7 | 20,4 | >0,05 |
| | | 1 | 4 | 36 | 2 | | 33 | 2 | 8 | 7 | |
| | | 2,3 | 9,3 | 83,7 | 4,7 | | 76,7 | 4,7 | 18,6 | 16,3 | |
| 8. <u>Dorsogluteal</u> site is used since the site is innervated by major nerves | Correct | 4 | 5 | 40 | 8 | | 26 | 5 | 21 | 11 | 41 |
| | Wrong | 7,7 | 9,6 | 76,9 | 5,8 | <0,05 | 50 | 9,6 | 40,4 | 21,2 | 78,8 |
| | I do not know | 2 | 7 | 152 | 28 | | 97 | 20 | 72 | 41 | 148 |
| | | 1,1 | 3,7 | 80,4 | 14,8 | | 51,3 | 10,6 | 38,1 | 21,7 | 78,3 |
| | | 1 | 4 | 35 | 2 | | 24 | 3 | 15 | 9 | 33 |
| | | 2,4 | 9,5 | 83,3 | 4,8 | | 57,1 | 7,1 | 35,7 | 21,4 | 78,6 |
| 9. <u>Dorsogluteal</u> site is used since major blood vessels supply blood to the site | Correct | 2 | 5 | 48 | 8 | | 34 | 4 | 25 | 15 | 48 |
| | Wrong | 3,2 | 7,9 | 76,2 | 12,7 | >0,05 | 54 | 6,3 | 39,7 | 23,8 | 76,2 |
| | I do not know | 4 | 8 | 140 | 20 | | 84 | 21 | 67 | 35 | 137 |
| | | 2,3 | 4,7 | 81,4 | 11,6 | | 48,8 | 12,2 | 39 | 20,3 | 79,7 |
| | | 1 | 3 | 39 | 5 | | 29 | 3 | 16 | 11 | 37 |
| | | 2,1 | 6,3 | 81,3 | 10,4 | | 60,4 | 6,3 | 33,3 | 22,9 | 77,1 |
| 10. <u>Ventrogluteal</u> site is used since it is anatomically larger | Correct | 4 | 5 | 84 | 7 | | 50 | 9 | 41 | 29 | 71 |
| | Wrong | 4 | 5 | 84 | 7 | >0,05 | 50 | 9 | 41 | 29 | 71 |
| | I do not know | 2 | 9 | 104 | 21 | | 68 | 12 | 56 | 25 | 111 |
| | | 1,5 | 6,6 | 76,5 | 15,4 | | 50 | 8,8 | 41,2 | 18,4 | 81,6 |
| | | 1 | 2 | 39 | 5 | | 29 | 7 | 11 | 7 | 40 |
| | | 2,1 | 4,3 | 83 | 10,6 | | 61,7 | 14,9 | 23,4 | 14,9 | 85,1 |
| 11. <u>Ventrogluteal</u> site is used since it causes less pain to the patient during and after the injection | Correct | 3 | 6 | 104 | 15 | | 61 | 15 | 52 | 34 | 94 |
| | Wrong | 2,3 | 4,7 | 81,3 | 11,7 | >0,05 | 47,7 | 11,7 | 40,6 | 26,6 | 73,4 |
| | I do not know | 3 | 6 | 79 | 14 | | 57 | 8 | 37 | 16 | 86 |
| | | 2,9 | 5,9 | 77,5 | 13,7 | | 55,9 | 7,8 | 36,3 | 15,7 | 84,3 |
| | | 1 | 4 | 44 | 4 | | 29 | 5 | 19 | 11 | 42 |
| | | 1,9 | 7,5 | 83 | 7,5 | | 54,7 | 9,4 | 35,8 | 20,8 | 79,2 |

Results

- **Table 4** shows the sites that the participant nurses choose when giving an IM injection and the reasons behind their choice.

The findings reveal that *50.2% of the nurses use the DG site, 26.1% use the VG site and 23.6% use both sites.*

29.4% of the nurses that use the DG site expressed that it is easier to give an IM injection.

On the other hand, *50.9% of the nurses that use the VG site* expressed their choice with reference to *the distance of the site from the nerves and blood vessels.*

Finally, *54.1% of the nurses* that use both sites stated that *they have theoretical knowledge of both sites.*

- Statistically meaningful difference between the choice of the site and the reasons of the choices is found ($p < 0, 05$).

Table 4. Sites Chosen By The Nurses When Giving An IM Injection And The Reasons Of Their Choice

| | Site Used | | | | | | P |
|--|---------------|------|--------------|------|--------------------|------|-------|
| | DG (n=102) | | VG (n=53) | | DG ve VG (n=48) | | |
| | Q | % | Q | % | Q | % | |
| Site preferred when giving an IM Injection | 102 | 50,2 | 53 | 26,1 | 48 | 23,6 | |
| Reasons Of Using The Site | | | | | | | <0,05 |
| Easier Injection | 30 | 29,4 | 5 | 9,4 | 1 | 2 | |
| Less number of Nerves and Blood Vessels | 12 | 11,7 | 27 | 50,9 | 1 | 2 | |
| Safety | 18 | 17,6 | 13 | 24,5 | 0 | | |
| Education at School | 13 | 12,7 | 2 | 3,7 | 2 | 4,1 | |
| Patient's Preference | 1 | 0,9 | 0 | | 1 | 2 | |
| Habit | 12 | 11,7 | 1 | 0,9 | 1 | 2 | |
| The Situation of the Patient | 1 | 0,9 | 1 | 0,9 | 16 | 33,3 | |
| More Experience with the Particular Site | 7 | 6,8 | 0 | | 0 | | |
| Sufficient Knowledge of Both Sites | 0 | | 0 | | 26 | 54,1 | |
| It is Easier to Position the Patient | 1 | 0,9 | 3 | 5,6 | 0 | | |
| The Site has Wider Application Area | 7 | 6,8 | 1 | 0,9 | 0 | | |

Conclusion

- **The participant nurses are well-aware of the safeness of the VG site and that they are able to use it in clinical practice.**
- **Their knowledge level is related with education levels and professional experiences.**
- **Most of the participants had adequate knowledge of the characteristics of the DG and the VG sites.**

Conclusion

- The research findings imply that nurses should be given education about the advantages of the VG sites and identification of the sites during their undergraduate studies and professional lives.





Teşekkür ederim