

Correct site on fingertip for checking blood glucose level and their impact on patient

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ABSTRACT

Introduction: Nursing is mostly considered as a practice-based profession which should be updated with different research and evidence-based practices to allow advances in the profession and improve the image of nursing all over the world. Such good practices apply to all patients but especially to diabetic patients who are prone to different problems such as delayed healing, abscess at the wound site, loss of nerve sensations, etc. Hence, wrong prick for checking blood glucose level can lead to a number of problems which could be avoided.

Objective: To compare different practices i.e. glucose monitoring through fingertip versus side of nail bed puncture by nurses and their impact on patients.

Material & Methods: This descriptive study was conducted in a private teaching hospital of Islamabad, Pakistan, from July 2020 to November 2020. Subjects included twelve registered nurses working in Emergency department, and 4 diabetic patients in the Urology unit. A self-structured 14-item Questionnaire was used for collection of data from the nurses. Patients were asked to evaluate their preference for either of two methods of fingertip needle prick. Data were coded and entered in SPSS 23.0 for descriptive statistics.

Results: The overall level of knowledge and practice of nurses about fingertip prick technique based on a 14-item questionnaire was adequate (63.1% correct answers; range 28.6% to 85.7%), though a number of important areas needed improvement. Diabetic patients preferred the lateral fingertip prick rather than the central fingertip prick due to lesser pain and ability to use fingertips in daily routine.

Conclusion: Knowledge and practices of Emergency department nurses about drawing blood samples through fingertip pricks needed to be further improved in line with provision of evidence-based patient care.

Keywords: Nurses; Nurse Practitioners; Phlebotomy; Puncture; Blood Specimen Collection; Blood Glucose.

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INTRODUCTION

According to David Sackett,¹ Evidence Based Practice (EBP) is “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient”. This definition clarifies the assimilating individual clinical expertise with the best available external clinical evidence from systematic research. In nursing EBP is very important because competence of nurses depends on it. Along with that, use of EBP brings more advancement in nursing profession. Nursing is mostly a knowledge based profession and to update our knowledge and practice are much needed in this era.² Therefore we need to review the existence practices and update them through proper Evidence Based Practice. Along that we should be conscious about the disease process of the patient and every nursing practice should be competent to provide best care rather than to give more harm to their patient. As an example, diabetic patients are very prone to different problems such as delayed healing, abscess at the wound site, and loss of nerve sensations.³ A wrong prick for checking blood glucose level can exacerbate these problems.⁴

MATERIALS & METHODS

This descriptive study was conducted in the Emergency department and Urology Unit of Shifa International Hospital (SIH) from July 2020 to November 2020. Twelve nurses working in Emergency department were the participants of the study, in addition to 4 patients selected from Urology Unit. The areas were selected on the basis of investigator convenience. The nurses were asked to answer a 14 item-questionnaire related to knowledge and practice of correct method of fingertip prick for blood glucose estimation. The patients were subjected to two methods of fingertip prick and asked to report their preference for either method. Data were analyzed by using SPSS version 23 for descriptive statistics.

RESULTS

Results of the nurses' responses are given in Table 1. An overall correct mean score of 64.3% (9 ± 2.2 /14 items) was obtained by nurses. The frequency of correct responses based on a passing score of 50%, was 10/14 (71.43%) correct responses; however, when the detailed responses were analyzed, weaknesses became quite obvious.

Noteworthy is the response to item 3 (regarding the nursing practice before checking blood glucose is taking of consent) where only 9% of the participants were correct and 91% incorrect. Furthermore, in item 12 which dealt with “Rapid glucose checking after using alcohol swab”, only 17% answered correctly and 83% incorrectly. Similarly, in item 10 which is important for nurses to check the glucose level from lateral side

of the fingertip, only 33% of the participants answered correctly and 67% were incorrect.

Regarding the four diabetic patients who were asked to evaluate two methods of fingertip prick (center and lateral), all preferred the lateral mode, as to them it was less painful and had lesser cosmetic consequences.

Table 1: Overall competencies of the participants (n=12).

#	Questions	Correct (%)	Incorrect (%)
1.	Normal blood glucose range	42	58
2.	Appropriate time to check the patient glucose level	100	00
3.	Consideration for nurse before checking blood glucose	09	91
4.	Essential step for patient before checking blood glucose level	50	50
5.	Frequently use site for checking blood glucose level	100	00
6.	Complication due to same area prick	58	42
7.	Proper size of lancet	100	00
8.	Blood glucose level from wet finger	83	17
9.	No changes due to different factors (external pressure, first drop)	67	33
10.	Tip of the finger versus lateral side of the fingertip	33	67
11.	Warm fingertip before checking blood glucose level	58	42
12.	Rapid blood glucose checking after using alcohol swab	17	83
13.	Use of single needle for more than one time	83	17
14.	Rotate finger site for checking blood glucose level	83	17
Total		883 (63.1%)	517 (36.9%)
Mean score (out of 14)		9 (64.3%)	
Std. Deviation		2.2	
Minimum		4 (28.6%)	
Maximum		12 (85.7%)	

DISCUSSION

The overall competency score was acceptable at over 71% of nurses passing the questionnaire. However, in some of the important, if not essential items, the passing scores were much lower than expected or acceptable; thus the mean score of 64.3% may not reflect true competence of nurses in their knowledge and practice of fingertip needle prick. An article mentioned that nurse clinicians should avoid pricking the tips of fingers to reduce the incidence of soreness on the most frequently used surfaces of the fingers, - the lateral or medial aspect of the heel should be used, and the puncture should be no deeper than 0.01 in/2.0 mm to avoid osteochondritis.⁵ Regarding the correct site of checking blood glucose level through lateral aspect of fingertip, only 33% participants answered correctly which is an alarming sign; however, intervention in terms of demonstration to patients the correct site and feedback of the patients as well as nurses were satisfactory. Adding to this, Madeline (2017) mentioned that there are eight tips to reduce finger prick pain, and to test on the side of finger is the first tip because there is better blood flow as compared to the pad of the finger.⁶

To see the outcome of Evidence Based Project (Correct site for checking blood glucose level through fingertip), investigator selected four diabetic patients from a private hospital in Islamabad for blood glucose testing and obtained their feedback regarding preference for one of the two methods (center versus lateral) of fingertip pricking. Patients verbalized that they felt less pain in the lateral method as compared to the center of fingertip,

a finding also referred to in another study⁷. Along with that patients mentioned that by using that way of checking of blood glucose they did not feel any change in their body image while using their fingertips in daily activities. Studies have documented the lack of sufficient knowledge and practices regarding self-checking of blood glucose through fingertip pricks among diabetic patients,^{8,9} and guidelines^{10,11} suggested.

Nurses involved in checking blood glucose level of patients gave valuable feedback. By using lateral aspect of the fingertip they found that patients had rich supply of blood at that area making nurses feel more satisfied; therefore, compared to the center of fingertip it is a better area for checking blood glucose level.

LIMITATION

As the study was conducted in a single hospital and was of a small sample size, the findings cannot be generalized.

CONCLUSION

Despite adequate knowledge of nurses regarding the fingertip prick sites, areas needing improvement were identified. Diabetic patients preferred the lateral fingertip prick site for lesser pain and routine use of fingertip in daily activities.

RECOMMENDATION

Teaching and training sessions for the nursing staff should be conducted in routine to improve their knowledge and evidence-based practice.

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