

The effect of teaching medical physics on nursing staff and their dealings with ionizing radiation

Dr. Wissam Mahmoud Akram

Head of Al-Mahara College for Medical Sciences, Tobruk, Libya

A summary

Ionizing radiation is widely used in the field of medicine both for diagnosis and treatment. So, Understanding the principles of radiation safety and how to apply them in clinical practice is critical for medical and paramedical staff. The study was conducted to assess the knowledge of nursing staff about ionizing radiation and protection from ionizing radiation during the diagnostic and therapeutic examination. In this study, a quantitative descriptive approach and a comprehensive review of previous studies were followed in order to emphasize the importance of teaching medical physics and ionizing radiation science because of its extremely important impact on the nursing staff working in medical institutions and radiological examination centers of both types, diagnostic and therapeutic. Through this study, we noticed that the paramedical staff's knowledge of physics and technology was not sufficient, and from our point of view, it does not meet the needs of health care institutions that require a deep understanding of tools and equipment that depend on the principles and laws of physics.

We also expect that the nursing staff's lack of knowledge of the physical foundations and laws that are used may have a negative

impact on the patients' condition in clinical practice Thus, there is a need to improve nursing students' knowledge of physics by changing the way biophysics is taught in the nursing curriculum .
Keywords: biophysics. Physics and technology .

Introduction

The education system is based on suggesting the lowest level of information needed by the nursing staff in the country

Education at least to bachelor's requirements [1]. At the same time, biophysics is defined as one of the core scientific subjects of theoretical and technical higher education for nursing professionals and public care administrators (2) .depends on the graduate

The nursing study program is based on biophysics, being a compulsory subject that precedes the clinical practical part, which is a scientific subject that precedes it All clinical subjects [2, 3]. However, the prevailing belief among Nursing students find biophysics courses too difficult and unnecessary. Students are often unaware of the importance of this science And they are not always able and willing to accept the reasons for its inclusion in the school curriculum .In this research we use a deep analysis of the reality of previous studies in which it was done A test to assess the physical and technical knowledge of nursing staff .

The process of determining the amount of knowledge of biophysics that nurses work with and their ability to apply this knowledge in the practice of health care. Includes biophysics taught

In the first year of a Bachelor's degree in Nursing. In eleven missions carried out by nurses in medical institutions

It covers three subject areas where physics is relevant to nursing

as follows: A. Medication administration - through procedures focused on: 1. Reading and measuring to determine the correct amount of medication;

.2 Knowing the physical properties of drugs (activator, solution) that may affect the dosage .

B. Detection of vital signs - and procedures followed are:

.1 Know the physical factors and methods of measurement and accuracy,

.2 The ability to evaluate the measured accuracy .

C. Know the duties of the nurse at the work site assigned to him, which are of vital importance for the correct and safe treatment of patients .The fact that all tasks focus on the activities performed by nurses

in health care institutions. In our opinion, the nursing staff can deliver results

Good by applying knowledge while performing duties .

Performance may be poor

As a result of the lack of understanding of (biological) physics in the stages of education or when the practical side of physics is not sufficient in the secondary stage

school [4-6]. Our teaching experience indicates that if the students

They apply elementary knowledge of physics in solving questions

You can get better results not only in theoretical questions but also in nursing practice .A lack of skill in physics was identified in the questions but also in reading calibrated scales and the correct use of units .Referring to the units of measurement, we note that their importance is concentrated when the nurse works in countries that use different physical units for SI units (in Britain, for example) (4)

On the other hand, the science of dosage is related to drugs and the consideration of units for doses and the different conversions between them [7]. where The same active substance can be different in different solvents

according to doses. It is possible that the reason for this result is the fact that there is a lack of information during the study of science

Nursing, which confirms the need to pay attention to the practical side during the study And the performance of procedures and applications for the implementation of health care in the nursing staff .Applications of the principles of physics

With the properties of liquid medicines, noting that they are not mentioned in recent research and studies

While it is one of the most important knowledge affecting the performance of the nursing kit. Also measure blood pressure and obtain information

From the patient's temperature chart, it is included in the basic nursing activities and in general

It is a process used in all hospital departments. However, it has been found that many nurses suffer from deficits In their knowledge of the correct way to measure blood pressure Their ability to effectively make use of the patient's body temperature and coordinate the information in

records. The literature also includes examples of nursing students working in clinical fields and studies have confirmed them having a low level of knowledge using pulse oximetry, As well as the use of alarms and identify factors that can affect On the results of the examination (8)Stethoscopes are used routinely in almost all areas of healthcare institutions. However, the task focuses on the way the tools are employed And on material principles with the required quality(determine the material basis) by a much lower percentage than required. This indicates that nurses have a deficit in

Knowledge of physics and common tools Use in nursing practice. This confirms the need to follow practical methods

using "trial and error" methods [9]. These vulnerabilities can also be described In technical knowledge, it is a lack of qualification of the nursing staff [10-12]. New nurses must work with medical tools and devices .In order for them to be sufficiently aware of their instructions and they They often have problems with technical skills (13) The researchers also dealt with the frankness of some graduates with the inability to solve nursing problems upon graduation ,[9,14]and our findings show that it remains a related problem great importance nowadays .

The problems identified by the present work can be mitigated

By changing the method used in teaching biophysics in nursing courses and curricula .It should not only involve solving nursing problems however They can serve as a basis for explaining (biological) physical principles. To include concepts of physics required in nursing practice Using elementary ideas and minimal mathematics (4,15)

Health care practice should include training in technology and Technical skills in the continuing education of nursing staff (13) .

Conclusion

The concept of nursing includes the use of tools, So that the nurse is able to control and measure without errors in order Prevent harm to patients' health. This requires a certain level of Knowledge of physics and technical skills. through our study

It was found that the nursing staff did not have sufficient knowledge of physics, measurement theories and the tools they use

They are also unable to solve typical problems in nursing

And their use of the equipment is limited only to the biophysics learned in the early years of the game Diploma and Bachelor's degree. There is reason to fear that if the pathogen does not have it Comprehensive proficiency in physics and required skills Nowadays, there will be a risk of frequent errors in nursing practice .

References

.1Bologna Declaration of 19 June 1999. Joint Declaration of European Ministers of Education .

.2Council Directive 77/453 / EEC of June 27, 1977 on Coordinating the provisions stipulated in the law and regulations or administrative action in relation to the activities of nurses Responsible for general welfare .

.3Zákon č.742 / 2004 Z.z.Nariadenie vlády Slovenskej republiky o odbornej spôsobilosti na výkon zdravotníckeho povolania .

.4Balázsiová Z (2012) Konceptia výučby biofyziky v bakalárskom študijnom programe ošetrovateľstvo. thesis. Comenius University of Bratislava. 180 .

.5Ndalichako NJ, Komba AA (2014) Students' Choice of Subjects In secondary school in Tanzania: a student question capacity, interests or coercive circumstances. Open the magazine Social Sciences 2: 49-56 .

.6Balázsiová Z (2017) How well do you remember nurses School physics? (some results of comparison analysis(Technology education: engaging the new generation . Proceedings of the Baltic STE2017 iauliai 18-21 .

-7Efektívnosť v laykovej politike (zásadné kroky k Reforme laykovej Politics) (2011) Ministry of Health of the Slovak Republic

.8Milutinovic D, Repic G, Arandelovic B (2016) Clinical Nurses' knowledge level of oximetry: descriptive Multicentre study. Critical Intensive Care Nursery 37:19-26 .

.9McConnell EA (1995) How and what nursing staff learn about Medical devices they use in direct patient care. research In Nursing and Health 18: 165-172 .

.10Pfeil M (2008) Technology and Nursing: Practice and Concepts and book reviews edition: BARNARD, A and Locsin, R (eds.), Technology and nursing: practice, concepts and issues. 2007 . 195p. in. Nursing Education Today 28: 781-894 .

.11Zuzelo PR, Gettic C et al. (2008) describe the effect on

Registered nurse techniques. Clin Nurse Spec 22

(p): 132-140

.12Paclova Š, Mornstein V, Caruana CJ (2009) Biomedical Machine learning needs for first-cycle general nurses programs in the Czech Republic. World Congress of Medicine Physics and Biomedical Engineering, IFMBE Proceedings25/ Twelfth Springer 145-147 .

.13Ewertsson M et al. (2015) Use of technical and clinical skills devices among newly registered nurses: a questionnaire study . education nurse. Day 35: 1169-1174 .

.14Makhathini JTN and Uys LR (1996) Evaluation of Diplomats ability to solve problems from a holistic perspective nursing programme. Nursing Education Today 16: 340-349 .

.15Balázsová Z (2011) Analyzing Physical (Bio) Knowledge Retention of nurses after graduation from a bachelor's degree. conference Fourth International Conference of Nurses And the workers educate the paramedical staff. Brno. Tribune 5-11 .