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Is Theory-Practice Gap Existe ?

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Abstract
Healthcare profession is a fondamental type of job needed in any country and any Community. From birth to death, Humans need to be cared for by a professional health- care even in the absence of diseases. So, to form a competent healthcare workers,it is a necessity not an option. To achieve that, universities should guarantee a good quality of training for students. Moreover, in view of the specificities of the health professions as the alternance between theoritical part and practical part, working with human beings, students have the right to be benefited of a good quality of education. This study answers theory-practice gap in emergency and resuscitation medical techniciens's education (new requirement). A quantitative study was conducted. We used two mesure tools. A questionnaire was distributed for 48 emergency and resuscitation medical technicians newly recruited. We utilized an observational grid with five emergencies and resuscitation medical technicians newly recruited. Data base was analysed with SPSS.We found that, participants have a good level of knowledge in critical care but there are some fundamental questions to which they cannot respond correctly. According to our participant's observation, although the participants have answered correctly they did not do or poorly did some techniques. This study proved that there is a theory-practice gap. A similar result from the study by Bouchleghem and Mansouri et al (2018). This reality can be explained by the pedagogy used, the quality of the supervision on clinical area, a curriculum not adapted to the specificities of profession.
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1. Introduction

Healthcare profession is a fondamental type of job needed in any country and any Community. From birth to death, Humans need to be cared for by a professional health- care even in the absence of diseases. So, to form a competent healthcare workers, it is a necessity not an option. To achieve that, universities should guarantee a good quality of training for students. Moreover, in view of the specificities of the health profession study as to balance between theoritical and practical part. working with human beings, students can benefit from a good quality of education. To reach this goal, nursing education is based on two components (Saifan.,A, AbuRuz.,ME et Masa'deh.,R, 2015). The first theory, through which, the student learns the fundamental information and knowledge (anatomy, physiology, nursing discipline, professional ethics ...) necessary. The second is practice. It represents the basis of nursing education due to its clinical pathology because our profession is essentially clinical (Bouchleghem, & Mansouri, 2018). Indeed, the caregivers must have the capacity to integrate and operationalize this knowledge when he faces a patient who complains and needs care. Theory and practice are complementary. During this educational program, the caregiver needs theoretical knowledge to know anatomy, physiology, pharmacology, and the theories that guide nurses ... but also, the learner must handle the equipment, know the devices, and know how to act in an emergency situation, manage stress adequately and get adapted to changes in the field.... (Lander, 2000). The gap between theory and practice represents a problem. Especially, with the permanent changes in clinical area (McCaugherty, 1991). In healthcare, several studies reveal that there is a significant difference between these two components (what is taught in the classroom and what the student finds in the practical field). This gap decreases quality of care and patient's satisfaction (Aththiligoda et al, 2012). Carlott et al (2006) claim that, despite the important number of survey, which deals with this problem, theory-practice gap, still right now a poorly understood phenomenon. In fact, to assimilate the nature of the problem, more explanations are needed. So does theory-practice gap exist in emergency and resuscitation medical technician training?

2. Method

We used a quantitative design. We also used two tools for data collection questionnaire and observation grid. Before explain our sampling method, we must annouce that we have two types of participants : emergency and ressuscitation technisians newly recruited. Before starting it must be explained that the emergency and resuscitation technicians are a team that train paramedics specialized in critical emergency and resuscitation care. Participants were recruited according to very specific criteria which were the including creteria :

- Emergency and resuscitaion medical technician

- Newly recuited (from 2018 to 2021)
- Accept to participate to the present survey

In fact, it was impossible to chose rondom sampling because we can not find a list of emergency and rescissutaion technician from ministry because they did not have it. Without the list of name, we cannot chose probaliste sampling that's why we decide to work with non- probability sampling espesially convenience sampling. Finilly, we recuited 48 participants. Data collection for this part is carried out by an online questionnaire on google forms between march 2021 and July 2021. Questionnaire was sent for each participant in a personal way after verification of inclusion criteria. Finally 48 questionnaires were completed. the questionnaire allows us to have an idea about knowledge level of our study population in order to be able to answer research question: Is there a difference between theory and practice in emergency nurse education? The complete answer to this question was obtain after carrying out an observation in hospital units of participants. This combination of questionnaire results with observation grid results allows to build a complete vision on the difference between theory and practice emergency and resuscitation technicians training.

2.1 Questionnaire:

A questionnaire was developed based on international recommendations in order to know the level of knowledge of newly recruited emergency and resuscitation medical technicians. The questionnaire is made up of six parts : the first deals with the socio-demographic data of participants. The other five parts deal with five care technics carried out by emergency and resuscitation technicians, which are the treatment of presure ulcer, technique of nasogastric sounding, oral care with intubat patient and emergency drugs overlap. Indeed, the second section is composed of seven items about the overlapping of catecholamines (adrenaline, noradrenaline..). The third section consists of four questions about nasogastric tube insertion. The fourth section is composed of three questions about oral care in an intubated patient and the last question deals with the prevention and treatment of pressure ulcer.

2.2 Observation grid :

To confirm the existence of a theory-practice gap among emergency and resuscitation technicians, it is necessary to observe practice carried out by the same participants to compare theoretical side (the knowledge tested by questionnaire) and practical side (observing in the hospital). We used four observations grid in this survey. We preserved an observation grid for each technic. All the grids have been developed according to literature recommendations.

3. Results :

3.1 Questionnaire :

After our data collection, We had a young participants (52% of participants ware an age > 26 years). Our participants do not have much practice experience (maximum 6 years). For exemple: Only 40% of our participants know that we give catecholamine by the proximal line of catheter. Moreover, 33% of participants start overlap 30 min before the end of syringe. For 63% of our participants, emergency and resuscitation medical technician do overlap for just dobutamine and adrenaline. In fact, we must also practice overlap for insuline for patients which suffer for exemple of acidocetosic coma. Participants proved a good knowledge level. In fact, 40% of medical technicians confirm that during overlap we must be present with patients, how it should be scoped to monitor patient's clinical condition.

To achieve the overlap emergency medical technician must decrease the speed 1 cc every 15 min or 2 cc every 15 min. 77 % of answers were correct. Also, The majority of participants took another syringe previously prepared and had an additional PSE during the transport of an intubated patient on catecholamine. For nasogastric insertion tube, patricipants have a good knowledge level. For example, they know that (66%), in case of nasogastric tube resistance, we must stop the technique, remove the probe and redo the technique, changing a probe of another caliber. However, there are some questions most participants cannot respond correctly. For example, 87% of participants do not know that the salem tube is used to perform gastric lavage. About mouth care, Almost 50% of participants use physiological serum and sodium bicarbonate to do mouth care. Or according to recommendations, we must practice a mouth care with mouthwash (chlorexidine 2%). Only 25% of participants said that they do a mouth care three times a day. In general, our participants succeeded in properly ordering the stages of performing oral care. About pressure ulcer, the majority of participants know the descriptions of different stages of pressure ulcer development. Only 8% know that we have to use hydrocolloid with pressure ulcer wound stage one. The majority of participants know the descriptions of different stages of pressure ulcer development. Only 17% of participants know that we use hydrocolloid to treat pressure ulcer in the second stage. Moreover, 52% patient position must be changed every 2 hours to prevent pressure ulcer appearance and 83% know that, to prevent pressure ulcer, we must apply alcohol with a circular movement.

3.2 Observational grid:

As we explained before, we made three observations for the five participants (T0, T1, T2). We will analyze the data collected one by one

3.2.a Nasogastric insertion tube:

To make it easier to understand the results of the observation grid for nasogastric sounding, we have decided to divide the stages of the technique into two groups: standard stages (they are performed in all types of technique : Hand washing preparation of material, informing the patient, traceability) and specific stages for this technique. Among five participants only three practice nasogastric tube insertion in their departments. This is why we were only able to observe and fill in three observation grids.

The standard steps:

All of the participants observed (Participants (P) 1, 4, 5) practiced simple hand washing (P1=100% done, P4= 66% done, P5=33% welldone), informed the patient (100% done, 100% welldone), prepared the equipment (100% done, 66% welldone, 33% done), transmissin (66% done, 100% welldone).

The specific steps:

Six of twenty steps that were either not performed or performed incorrectly (hyperextension of the head, examining the patient's nostrils, measuring the distance, stopping progress, to tilt his head, fixing the probe, etc. Example : for the step put the patient's head in hyperextension (P1: not done: 33.30% , P4: not done: 100% , P5: not done 66.70%). For the rest of the steps the three participants performed them when practicing the technique.

3.2.b Mouth care:

Four participants practiced mouth care (P1, P2, P3, P5). Two steps out of three were not carried out or poorlydone (check contradictions: 100% poorlydone, practice care three time\day 100% not done)

3.2.c Prevention and treatment of pressure ulcer:

Prevention of pressure ulcer:

In this part, only three participants practiced pressure ulcer prevention in their departments (therefore three observation grids were completed). According to our observation, two participants do not carry out the preventive measures (P1 and P3 100% not done).

Treatment of pressure ulcer:

Since this part deals with the modalities of the dressings according to the stage of the pressure ulcers, two participants out of three did not meet all the stages because of the nature of the service (emergency department and SAMU : Service d'Aide Médicale Urgent). This explains the lack of answers for some items. Of nine steps, only four were performed (Put on suitable equipment, Make a hydrocolloid dressing in case of inflammation, If there is a yellow plaque: dry: with hydrocolloid: alginate, Infected wound: dressing with silver or with charcoal).

3.2.d Catecholamine overlap :

Only four participants practiced catecholamine overlapping in their services. For this technique, the participants completed almost all the steps except one: Monitor the patient's MAP and HR while performing the overlop (P1: 66.66% not done or poorlydone, P2: 100% poorlydone, P3: 66.70% , P5: poorlydone 100%). The step missed by the participants is fundamental when carrying out the overlap. We can then say that, despite respecting most of the steps in this technique, the participants forgot a crucial step that cannot be neglected.

By comparing the results of the questionnaire and those of the observation grid, we can deduce:

• Catecholamine overlap: 6% of participants know that when performing overlap there is a risk of arterial hypertension and tachycardia and 40% affirmed that it is important to monitor the patient during the performance of the overlap. this technique. On the other hand, observed participants did not monitor the patient during catecholamine overlap.

• Nasogastric catheterization: participants know how to elevate the head and put the patient in a semi-sitting position before starting the technique. However, this step was not performed by the four participants observed.

• Mouth care: although 25% of participants know that mouth care must be performed three times a day, no candidate observed has performed this step.

• Prevention of pressure sores: 52% know that the patient's position must be changed every two hours and 83% know that it is necessary to carry out passages with alcohol to prevent pressure sores. However, not all of the candidates observed did either the change of position every two hours or the alcohol massages.

• Treatment of pressure ulcers: although 52% know that it is necessary to make the change of position every two hours and 83% declared that it is important to make massages with alcohol no candidate observed practiced these steps. On the other hand, among three candidates, one put the hydrocolloid for stage 2 pressure ulcers

At the end of this analysis, we can say that yes there is a difference between what the participants know and what is achieved.

4. Discussion

In the present survey, we tried to know if there is a theory-practice gap in emergency and resuscitaion medical technicien training. As it's mentioned above, with the quantitative part, we showed that the participants have an

acceptable level of knowledge in terms of resuscitation. They were able to answer questions correctly. However, by comparing the level of knowledge with what we have observed in practice, we see some differences. It means, there are questions on which they answered correctly, but they do not do them. This finding leads us to confirm that yes there is a difference between what is taught (theory) and what is practiced (practice). We worked with a young population (M= 25.88). For the four sections of the questionnaire, the participants were able to answer the majority of the questions.

4.1 Knowledge of nurses towards nosagastric tube insertion :

Performing a nasogastric catheter is a technique widely used in critical care because of it's multiple indications. It is a fundamental act of care, essential and sometimes vital for certain types of patients. In Tunisia and despite the absence of a repository of skills which determines the tasks of each health care givers, this technique is usually carried out by paramedical personnel: nurses, emergency and resuscitation technicians and anesthesia technicians and resuscitation. In fact, the majority of respondents in our study showed a good level of knowledge regarding nasogastric tube insertion. The participants were able to answer the four questions asked. Indeed, 83% know how to measure the length of nasogastric tube. But, observing the practice of our participants, and although they know very well that the patient's head must be raised to put the probe in place, they forgot to do this step in practice. Nalukenge (2013) conducted a survey aimed to assess the knowledge attitude and practices towards the nasogastric tube insertion among the nurses of International Hospital Kampala. She found the same result since 82% of the participants managed to choose the right probe to do the technique. Also we asked about Salem tube indication because it is the most useful type of nasogastric tube in our country. Indeed, 87% know the usefulness of Salem tube. In case of nasogastric tube resistance, participants gave the correct answer (66%). However, Shahin's et al (2012) study witch aim to to examine the impact of a designed instructional program on the nurses' knowledge and practices regarding enteral nutrition in the critical care department of Al-Manial University Hospital, pouved a lack of nurse's knowledge and a practice level about nasogastric tube insertion . Actually, only 15 nurses out of 85 had an adequate knowlegde about NGT insertion.This diffrence may be explained by the difference in the characteristics of the two populations indeed our population is younger and targets the newly recruited (more than 60% of the participants of Shahine et al (2012) aged over 25) so they still remember the recommendations.

4.2 Knowledge of nurses towards catecholamines overlap :

Catecholamines are fundamental drugs in all critical care structures. They have an effect on adrenergic receptors and they can save lives (Gueugniaud et al, 2002). As we explained above, catecholamine overlap is an essentiel technique in critical health care given the importance of these indications. Many medication errors caused by nurse's poor skills an insufficient knowledge, errors in the relay procedure... That's why it's important to evaluate nurse's level knowledge and to strengthen it (Chen et al, 2014). In the present study, regarding catecholamine overlap, majority of participants do not have a satisfactory level of knowledge. Infact, among the seven questions the majority of participants were able to answer three questions correctly. Certainly, Only 40% of our population know that we administre catecholamine by the proximal line of catheter. Moreover, as we have already explained in the results section, observing their practice, the four participants forgot to monitor the blood pressure and the heart rate and they did not respect the change in flow rate with 0.2 or 0.5 ml\h of the two syringes. A study conducted by Chen et al (2014) which aimed to develop and validate an instrument to evaluate nurses' knowledge and to understand the obstacles that they encounter when administering resuscitation medications, found that nurses have a deficit of knowledge toword medication administration in critical care. Also, they demonstrates that performance deficit, not following procedure and knowledge deficit are the main causes of medication errors. we can explain the similarities of the results of the two studies by the fact that, perhaps, there is a problem in the learning of cathecolamines, whether theoretical or practical, which can explain this cognitive gap in our participants. In critical care units, there are rarely protocols that explain the use of catecholamines, the method of dilution and no protocol on how to relay it. It always depends on the will and the competence of the caregiver. Even Ricard et al (2011) ,in their literature, declared that train healthcare givers can reduce adverse events during.

4.3 Knowledge of nurses towards mouth care :

For mouth care, participants were able to answer two questions among three. For this section, we cannot determine the level of knowledge of our participants by only three questions. However, we must affirm that they have succeeded in correctly ordering all the stages of the realization of the treatment and to mention the solution to be used. In reality, 88% said that we use mouthwash in mouth care. In the other side, only 36% of participants said that they do mouth care three times a day. As we demonstrate, the realization of this care was not of good quality (no candidate observed carring out mouth care three time a day). An's et al (2022) survey, wich aimed to to investigate oral health literacy and oral health behaviors of nurses, and explore the association between oral

health literacy with demographic vari- ables and oral health behaviors, they found that nurse's oral health literacy was at a moderate to low level. In an other study, Nagarakanti et al (2019) found that only 2.10% of participants perform oral hygiene mouth more than twice a day. According the author, this finding explained by a lack of training and patient compliance. Similarly, Cardoso et al (2023) in their work ,which aimed to promote compliance with the best evidence-based recommendations on oral hygiene in patients with stroke, found that quality of oral hygiene is not according to recommandations. Comparing our results with those of Nagarakanti's et al (2019), we can say that they're both the same. In fact, we can explain this similarity by the lack of training and awareness of the emergency and resuscitation medical technician concerning the importance of this type of care. Also, the absence of service's protocols which require the practice of this treatment three times a day : Generally, the staff do mouth care in the morning in parallel with the personal hygiene and the change of the attachment of the intubation tube. It is essential to say that several efforts are necessary to improve mouth care technique.

4.5 Knowledge of nurses towards prevention and pressure ulcer's treatment :

The participants have a good level of knowledge regarding the description of pressure ulcers's (PU) stages. However, this level is insufficient for the treatment of PU. In fact, more than half of the participants know that they must change the position of the patient every two hours and 83% montioned that it is necessary to make circulatory movements with alcohol to prevent the appearance of PU. In the present study, 85% of participants were able to determine the correct description of stage 1 pressure ulcers, 92% for stage 2, 81% for stage 3, 69% for stage 4, 71% for stage 4. Concerning PU's traitment, participants were able to give correctly stage 4 treatment (56%). Mohammed et al (2020), in their study which aimed to assess nurses' knowledge towards pressure ulcer prevention, and its associated factors in Hawassa University Comprehensive Specialized Hospital, Hawassa, Ethiopia, declared that nurse's knowledge of pressure ulcers was inadequate. Indeed, the mean knowledge score of nurses was 25.22 out of 41 item questions. In the some study, 57.9% of nurses give the correct classification of pressure ulcer especially stage IV (86%) and stage I (75.6%). This concordance between the two studies can be explained by the fact that the definition of the first and fourth stage of pressure ulcers are clear and easy to remember. In practice, observed participants did not do all preventive measures and they did not treat the wounds properly. While, present study's finding's contrust with Abrahams's et al (2023) who carried out a study which aims to determine undergraduate nursing students' knowledge, attitude and practices towards the prevention and management of PU. They reported that Namibian's undergraduate nurses have a good knowledge and a positive practice (97%). We can explain this contradiction by the fact that the present study is intended for newly recruited emergency and resuscitation medical technicians, while the second is carried out with students for the Bachelor of Nursing Science Honors degree with simulation-based learning. However, in the present study, there are participants who had the opportunity to do a practical sessions on PU and others have only studied the change position and other PU prevention measures.

5. Conclusion

Practice side is a speciality of health care education. This survey proved the existence of this gap also in Tunisia similer with others studies. Theory-practice gap still right now a problem to resolve in emergency and rescusitation's education. Universities, hospitals and ministries must collaborate to facilitate student's integration with practice environnement because practice must complete and facilitate theory understanding. We must, as a health care teacher, succed to build the link and make a balance between theory and practice because the imbalance of one part disturbs the other and consequently have a poor quality of care.

Study's limitations :

we can said that sampling reduced number represent the important limit of this study.

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