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## Knowledge Questionnaire over Forensics Nursing Practices

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### Abstract

**Problem Statement:** The forensics nursing science combines the clinical approach to the person who is a victim of violence with the investigation related to the search of traces of that situation.

**Research Questions:** What is the level of knowledge over forensics practices in nursing students?

**Purpose of the Study:** Evaluate the level of knowledge over forensics practices of the nursing students; describe the relation of the social demographic, academical and training variables in forensics nursing with the level of knowledge.

**Research Methods:** A descriptive study conducted with a convenience sample of 190 nursing students. 78.9% female, 49.5% with mean ages of 22.44. The content of the Knowledge Questionnaire over Forensics Nursing Practices – KQFNP Cunha & Libório was built based on the literature revision and submitted to the appreciation of an external judge, expert in the area.

**Findings:** The majority of the students scored with good level of knowledge (40%). The knowledge of insufficient level occurred in 36.3% and the sufficient in 23.7%. There was a deficit of knowledge over: practical aspects of the traces preservation: use of paper bags; care of the aggressors; the possibility of glass and ink constitute forensics traces.

**Conclusions:** The evidences found enhance the need of investment in the training of the students over the forensic nursing practices, particularly concerning the aspects in which reveal a knowledge deficit, enabling them to adopt good practices. This research began the psychometric study of the KQFNP, however, it is recommended the performance of other investigations in order to proceed the validation.

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**Keywords:** Knowledge; Questionnaire; Forensic Nursing practices.

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### 1. Introduction

In the Ancient Egypt, medical, legal and thanatological practices contained already traces of forensic science, particularly related to virginity, sexual assault, homicide, physical injury and moral problems (Calabuig, 2004 cited

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by Silva, 2010). Historical documents revealed that one of the first forensic autopsies took place at the time of the Roman Republic, around the year 44 BC (Roland, 2008), others show that even before the French Revolution midwives testified about the sexual assault and pregnancy (Camp, 1976 cited by Lynch & Duval, 2011).

Currently, forensic sciences include a set of scientific disciplines that working closely and joining their knowledge together are intended to assist justice in the resolution of cases in a medical-legal context. Therefore, forensic pathology, anthropology, toxicology, thanatology, pathological anatomy, ballistics, criminology, dentistry, psychiatry, psychology, radiology, biology, genetics, chemistry, physical, and most recently nursing assume forensic relevance (Pinto da Costa, 2004; Roland, 2008; Vaz, 2008).

Pinto da Costa (2004) states that the forensic science encompasses several areas of scientific, legal knowledge with a highly social side, and this fact leads to the promotion of health. We are before a science without defined limits which may be extended to nursing, not only as a challenge but as a skill to be developed (Lopes, 2011). Scientific and technological progress has contributed to a remarkable evolution of forensic science (Roland, 2008), occurring simultaneously a progressive strengthening of its influence, quality, credibility and greater investment in education and research (Vieira, 2012).

The forensic sciences and nursing have arisen together in the eighteenth century, when midwives were sent to courts to give their opinion in situations of pregnancy, virginity and rape. However, the relationship between these sciences was evident from studies in the 80s and 90s of the twentieth century in the United States of America (USA), which have spread these fields of knowledge into countries such as England, Canada, Australia and northern Europe (Riviello, 2010 Silva, 2010).

Violence and its subsequent trauma became a serious public health problem worldwide (Hammer, Moynihan & Pagliaro, 2006; Lynch & Duval, 2011; APEFORENSE, 2012), and it is urgent to implement cooperative and interactive alliances among health professionals, court system and other scientists in a multidisciplinary and multidimensional collaborative effort (Hammer, Moynihan & Pagliaro, 2006).

The nurse is in a privilege position to identify, assess and treat victims of interpersonal violence and / or trauma, providing physical, emotional and social care, as well as to simplify and promote the preservation, collection and documentation traces with medical and legal relevance (Emergency Nurses Association (ENA), 2010; Sheridan, Nash & Bresee, 2011; Lynch & Duval, 2011; Whetzel, 2011).

- Collection and preservation of forensic traces

Evidence designates a clue, a sign used to determine the truth of something. The trace can also be an evidence, although weaker and less visible (Gonçalves, 2011). The evidences are means that justify the existence or not of facts, in order to sustain subsequent legal judgments (Braz, 2010). By its turn, the expert evidence seeks the assessment of the facts by professionals when they are trying to accurate special knowledge that the judges do not have (Rodrigues, 2008). In court there are recognized three types of evidence: direct (witness who observed the event), situational (physical evidence or statements) and real (tangible objects). The evidence and forensic physical traces may include: weapons, explosives fragments, metals, paper or documents, fingerprints, injuries, glasses, brands or pieces of objects, paint fragments, clothes, blood, semen, vaginal fluids, saliva, sweat, feces, urine, secretions, vomiting, hair, nails, soil, fibers or other, existing at the scene, the body and clothing from the victim or from the perpetrator (Braz, 2010; Santos, 1998 cited by Gonçalves, 2011; Lynch & Duval, 2011).

The collection and preservation of forensic traces meet the *Locard's principle*: "*In the crime scene there are inevitably criminal traces which in turn, voluntarily or involuntarily, the criminal carries out with him from the place where the act took place*" and this principle has accompanied Legal Medicine and Forensic Science, since they were stipulated and recognized as sciences (Silva, 2010). This principle supports the theory that when a person or an object comes into contact with another individual, material or substance, there is the possibility of an exchange between them (Hammer et al, 2006; Innes, 2007 by Silva, 2010) and so for the victim assistance, professionals must meet this principle of transfer, and it is crucial to touch or move just what it is strictly necessary (Gomes, 2010). They must always use gloves and change them frequently, this procedure is essential to prevent cross-contamination (Da Costa, 2010).

Legally, the law enforcement officer is the responsible for the material evidence of the crime (Sheridan, Nash & Bresee, 2011). However, the forensic intervention should begin at the scene, where conditions are hardly ideal and law enforcement officers are not always present. Thus, the professionals who assist the victim will decide on the collection and preservation of traces (Lynch & Duval, 2011). Lourenço (2004) states that in first place one should think of the victim as a person, and then as a source of evidence in the certainty that the earlier the collection of

traces, most successful research will be. It is crucial that health professionals, who care for crime victims, hold knowledge about the preservation of physical evidence (Lourenço, 2004b).

Remove the victim's clothing should be done carefully, either it is done by the professional or by the victim. If it is needed to be cut, it should be done at the seams, away from the lesion area, preserving the shape of the bullet hole, stab or other tear (Sheridan, Nash & Bresee 2011, Lynch & Duval, 2011). If the victim undresses herself alone it should be done standing up on the top of two overlapping clean sheets. As the clothing is being taken off it should be placed on top of these sheets (never on the floor) avoiding them to be mixed (Sheridan, Nash & Bresee, 2011). Each piece, including shoes, must be carefully cleaned and packaged in individual paper bags, avoiding cross-contamination. For prevention it should be put up a sheet of paper between the parts of clothing that needs to be folded (Lynch & Duval, 2011). The top sheet of the stretcher / bed or one on which the victim was stripped should be collected (Sheridan, Nash & Bresee, 2011). Wetted parts should be left to air dry, in a secure location with restricted access and adequate ventilation (Hammer, Moynihan & Pagliaro, 2006 Lynch & Duval, 2011). Plastic bags should never be used, because they facilitate condensation of moisture, leading to the deterioration of the traces. Paper bags (air permeable bags promote drying content) must be sealed with adhesive tape as the staples can damage the contents. The nurse when is dating and signing the tape allows the verification of the inviolability of the bag through this procedure (Sheridan, Nash & Bresee, 2011).

It should be given special attention to the hands of the victim, protecting them with paper bags sealed with tape or rubber bands to the elbow. Rubbing or washing the victim's hands will compromise traces (Lynch & Duval, 2011). Manipulation or hand washing of the victim will degrade any traces of dried blood, gunpowder (case of injuries by firearms) or others so they should be protect until examination (Sheridan, Nash & Bresee, 2011).

When collecting bullets or cartridges, professionals must use gloves or surgical-type instruments (tweezers) making sure they are using non-metallic material. These traces should not be washed, and the best procedure is to dry them with hot air before the individual packaging in zip type bags or small containers (Hammer, Moynihan & Pagliaro, 2006 Lynch & Duval, 2011).

- Communication, documentation and chain of custody

Maintaining the chain of custody is fundamental to ensure the quality and probative value of the traces (Galvão da Silva, 2006). In Pinto da Costa (2004) and Lynch & Duval's (2011) opinion on clinical documentation is that it has a huge medico-legal validity, capable of applying justice. The medical report of the hospital, where the victim was assisted, is valued in medical and legal procedures made by the delegations and forensic offices (Da Costa, 2010). The nursing reports are part of the medical record of the patient and they can integrate a medical and legal process as such matter (Silva, 2010).

The best way to protect the victim and the professional is to ensure the perfect documentation of the facts. (Gomes, 2010) The proper preservation of evidence involves a complete, detailed, thorough, accurate, factual and objective report, avoiding assumptions or inaccuracies. (Gomes, 2010; Sheridan, Nash & Bresee, 2011; Lynch & Duval, 2011).

*"The wounds speak for themselves"* (Pinto da Costa, 2004). Thus, one should make descriptive notes of each lesion (size, color, shape, location, characteristics and surrounding skin material in the presence of injury or around it), and conditions in which the patient is admitted (how and when). The site of the invasive procedures should also be duly identified (Lynch & Duval, 2011). The documentation related to the location and characteristics of the injury or the material evidence must include, besides the written report, a diagram / body map and a photographic record (Sheridan, Nash & Bresee, 2011).

When the collection of traces is done, the photos of each lesion or object should be obtained whenever possible, before performing the treatments and after the consent of the victim or a family member / guardian. Photographs must clearly identify the victim, the affected areas and the measuring instruments (ruler, currency or other) to delimit the size of the injuries (Lynch & Duval, 2011). It should normally be made a detailed description of all traces collected (content, the person and the professional name, date, time, location, photographic record and final destination) in order to maintain the chain of custody (Hammer, Moynihan & Pagliaro, 2006 ; Lynch & Duval, 2011).

The documentation of the chain of custody must inform about those who manipulated or came into contact with the traces. Any transfer from one person to another or from one place to another should be recorded. This registration will follow the evidence till the end of the investigation, in order to get a chronological table of where and with whom it was till it is presented in court (the Galvão Silva, 2006; Lynch & Duval, 2011 Sheridan, Nash &

Bresee, 2011). All the procedures that are performed (identification, collection, preservation, storage, transport and analysis) should be accomplished under conditions that ensure their isolation and inviolability and they must be thoroughly registered (Galvão da Silva, 2006; Bronze, 2010). All the operations that require the opening of the trace's container involves its registration: who manipulated, the time and the place where it was manipulated, ensuring its chronological memory (Braz, 2010). The quality and the appreciation of the probative value of traces, as evidence in court, depend on the performance of all the involved in the victim's assistance, the collection and preservation of evidence and the chain of custody maintenance (Galvão da Silva, 2006 Vaz, 2008).

- Protection and victim support

Gomes (2010) emphasizes the importance of a comprehensive and humane approach to victims. None forensic activity should delay the evaluation and treatment of situations involving life-threatening, since the priority is to maintain the life of the victim or the perpetrators of crimes (Lynch & Duval, 2011). The earlier the collection of forensic evidence, most successful the research could be, but first the victim should be seen as a person, and then as a source of evidence (Lourenço, 2004a). Lynch & Duval (2011) argue that it is the professionals' responsibility to support the collection, preservation and documentation of forensic evidence. There should be specific protocols to the victim's approach in order to combine health care and criminal investigation procedures (Lourenço, 2004b).

In the cases which involve the treatment of victims or perpetrators of the crime, the evidence of crimes should be collected, preserved and documented for further laboratory examination. None forensic procedure may inhibit or delay the evaluation and the treatment of situations involving life-threatening, because the priority in emergency / urgency is the preservation of life. The forensic actions should have its beginning at the scene so it is up to the professionals who assist the victim / aggressor to decide when collection of traces can be implemented (Lynch & Duval, 2011).

The victim / perpetrator should be interviewed alone, and if (s) escort (s) try (on) disrupt their privacy, nurses will interfere, defending the interests of the victim (Sheridan, Nash & Bresee, 2011), because the maintenance of a safe environment, the respect for privacy and the victim's well-being are focuses of intervention of nurses. The nurse's role is to ensure the necessary care, to identify injuries, to report the history and to state the situation thoroughly, supporting and helping the victim to plan his safety and to know the alternatives and resources to change the situation which is living (Jagim, 2011). The nurse takes even an educator role related to the prevention of violence and the promotion of a family / school / work / social security and health (Lopes, 2011).

- Training in forensic nursing

The forensic nursing concept is given to the nurse Virginia Lynch, the founder and the first president of the International Association of Forensic Nurses (IAFN) (Sheridan, Nash & Bresee, 2011). From the 90s of the XX century, in the US, forensic nursing was declared as a modern, important science and with an essential role in terms of health care, and it started do be regarded as a new perspective of the holistic approach of nurses applied to the issues of law and justice (Hammer, Moynihan & Pagliaro, 2006; Lynch & Duval, 2011).

The science of forensic nursing was officially recognized in the United States in 1992 for the creation of IAFN, founded by 72 North American nurses with SANE training who became experts in the examinations in victims of sexual abuse. The current organization regulates the practice of international forensic nursing and encourages research, training and development of this activity in countries where violence reaches high levels (IAFN, 2006; Silva & Silva, 2009). In 1995, forensic nursing was considered a specific field by the American Nurses Association - ANA (Bader & Gabriel, 2010 cited by Silva, 2010; Kent-Wilkinson, 2008).

Forensic nursing comes from the broad field of the forensic medicine (Lynch, 2011), constituting itself as a new nursing practice and leading the nurse as a collaborator with high relevance in the court system scene. This science applies the scientific and technical knowledge of nursing to the clinical situations regarded as forensic ones. This specific field of nursing has to know how to apply the law, assuring the victim's well-being, and it represents a positive evolvement for the victims (Lopes, 2011). It assumes the crossing between the health system, where nurses are involved, and the legal system (IAFN, 2006; Lynch & Duval, 2011). It combines the general concepts of nursing with the principles of traditional forensic sciences and promotes a forensic clinical context; it also provides care to the victims or offenders, blending the forensic science with the nursing care field (APEFORENSE, 2012).

Nowadays, the forensic science incorporates the practice of nurses (Pyrek, 2006, cited by Silva, 2010), forming an integral part of a conscientious performance in emergency nursing action (Whetzel, 2011).

The forensic nursing practice may take place in very different contexts (health institutions, prisons and in the community). It provides assistance to the victims of violence and their perpetrators, acting on the physical, psychological and social traumas. Its role includes: identifying people in clinical and legal risk; the evaluation of biopsychosocial needs of victims, their families and communities, as well as perpetrators'; collection of traces; planning, setting objectives in this action area; the execution of nursing interventions and assure the assessment of the results (Silva, 2010).

The forensic nurse recognize, intervene and evaluate situations of violence, illness or death. This professional has knowledge on the workings of the legal system, documents, preserves and collects evidence and may provide legal support and advice to law enforcement (International Association of Forensic Nursing (IAFN), 2006; APEFORENSE, 2012). An effective and prompt advice can facilitate the access to evidences (Pereira, Cintra, Vieira & Santos, 2011). In terms of preventive education and rehabilitation he may mediate emergency services or others such as pediatrics, psychiatry, community health, schools, and so on. (Silva & Silva, 2009).

In short terms, forensic nursing field is gradually gaining recognition and once it constitutes a social emergency of today's society, the negative aspect is due to the lacking of a wide availability and adequate preparation of professionals in this area. Nurses with forensic training wish that one day, hospitals and other health institutions claim their presence, to ensure respect for medical and legal principles when they are applied (Lynch & Duval, 2011).

## 2. Problem Statement

For the relevance of its intervention assuring the well-being of victims, it is imperative that nurses are conscious about the preservation and documentation of forensic traces (Lynch & Duval, 2011). There are many nurses, who take care of violence victims, without specific and adequate training in this area. Therefore society and entities should rethink the training and the role of nurses in a crime scene and in the treatment of violence victims (Simões, 2010). Bearing this in mind, it is essential to invest in the training of nurses (nowadays and in the future), fostering the development of new responses in nursing care towards medical conditions with forensic contours and combating crime and violence. Nursing schools, as a rule, do not include in the degree course in nursing a specific curriculum on identification, collection, preservation and recording of forensic traces (Sheridan, Nash & Bresee, 2011), facts that the ENA stresses as an important area where nurses must have knowledge and develop their abilities (ENA, 2010).

The study that Lourenço carried out, (2004a) showed that most nurses had no knowledge on forensic medicine, that they did not hold training in the area and everyone recognized the need for specific training because they were unaware of the guidelines for preservation of forensic evidence. Canelas (2008) also found that 90.1% of the surveyed health professionals did not hold training to care for victims of violence and 76.9% expressed the need to attend training. When Silva (2010) studied the opinion and knowledge of 149 nurses on preservation of traces, found that the majority (93.3%) had no training in forensics and that 71.7% felt the need of such training.

Gonçalves (2011) assessed the knowledge of nurses about the maintenance of forensic evidences and concluded that they had already heard about forensic evidence, however most of them has revealed a knowledge gap in the matter. All the professionals admitted lack of training in the area, lack of means and methods of operation, although they considered their role was relevant in the collection and preservation of forensic evidence.

According to this, it is essential to implement the forensic training as well as it is urgent to include this content in the curricula of health professionals degree courses, because professionals had recognized some flaws in the victim's assistance related to the "lack of knowledge", the "lack of training" and "lack of resources for a correct approach and handling", Lourenço (2004). Thus, the continuous training of professionals, the effective training (technical and material), the care units and the development of best practice guidelines to supply and use organizational commitments manuals are strategies that urge the relevance of this subject in degree's training (Machado, 2009). The most cited studies along this article had shown a deficit of training and knowledge of nurses on forensic sciences, converging all in the need to rethink the academic training as well as the role, skills and practice of forensic nurse, problems that still little explored in the academic context in some countries. A common trait in all the researches carried out is the positive impact that training has on the increasing knowledge and quality of forensic practices.

It was in this context that this research emerged as a relevant, contemporary and attractive subject to develop.

### 3. Research Question

What is the level of knowledge over forensics practices in nursing students?

### 4. Purpose of the Study

Evaluate the level of knowledge over forensics practices of the nursing students; describe the relation of the social demographic, academical and training variables in forensics nursing with the level of knowledge.

### 5. Research Methods

A descriptive study conducted with a convenience sample of 190 nursing students. 78.9% female, 49.5% with mean ages of 22.44. The content of the Knowledge Questionnaire over Forensics Nursing Practices – KQFNP Cunha & Libório (Libório, 2012), was built based on the literature revision and submitted to the appreciation of an external judge, expert in the area.

### 6. Findings

The Knowledge Questionnaire over Forensics Nursing Practices (KQFNP) includes the General Questionnaire on Forensic Nursing (GQFN) [Questionário Geral sobre Enfermagem Forense (QGEF)], that consists of sociodemographic, academic and training questions in forensic nursing. KQFNP included 74 dichotomous statements (true or false) and aims to assess the knowledge of the concept of forensic nursing; forensic situations; forensic traces; communication and documentation of evidence and care in preserving traces.

Each of the KQFNP items was assigned into a score of 0 if incorrect response, or 1 if correct answer. The overall score of knowledge on Forensic Nursing Practice (PEF) can range between 0 and 74 points (integer values). The higher the score the better the overall level of knowledge. The reliability of KQFNP, evaluated by global Cronbach's alpha ( $\alpha$ ) coefficient, was of 0.807; was Split-half of the first part 0.785 and second part 0.673. As 18 items showed correlation with the overall score of less than 0.20, they would be eliminated, according to Streiner & Norman (1989). However, it was decided to keep them in KQFNP as they represent important aspects of forensic nursing, following the guidance of Maroco & Garcia-Marques (2006, p.84) when they say that "*the relevance of the item*" can "*count to its removal*". The emphasis was on content of the items leaving the KQFNP validation for future studies in larger samples, because according to Maroco & Garcia-Marques (2006, p. 80) "*only the repeated use of the instrument with different samples indicates something about the validity of the inferential process: an instrument that repeatedly generates reliable data can be said, with greater confidence, reliable*".

KQFNP consists of six subscales: Forensic Nursing Concept, with 10 items (1-10), Forensic Situations, composed of 12 items (11-22), Forensic Traces, which consists of 12 items (23-34), Communication and Documentation, with 10 items (35-44), General Nursing Care, with 10 items (45-54) and Traces Preservation, with 20 items (55-74). The study of the subscales' internal consistency showed reasonable rates in three of them (Forensic Situations, Forensic Traces and Communication and Documentation), ranging between 0.600 and 0.816, and lower rates in the other, ranging from 0.533 to 0.573.

The determination of the Pearson's Correlation matrix between the various subscales and between them and the overall score showed positive and significant correlations between the six subscales and the global score of knowledge, ranging between 0.498 and 0.684. Among the six subscales it is possible to see five small and insignificant correlations, ranging between -0.004 and 0.117 and ten significant positive correlations ranging between 0.171 and 0.473.

The results of the empirical study show that students answered correctly, on average, to 78.7% of KQFNP items, revealing to possess knowledge about forensic nursing practices.

There was a deficit of knowledge over: practical aspects of the traces preservation - the use of paper bags; care of the aggressors; the possibility of glass and ink constitute forensics traces. Simultaneously, there was deficit of knowledge about: the fact that caring for offenders is one of the forensic nursing focus, for 50% of students; the fact that the trauma and traffic accident may correspond to forensic cases, for 50% of participants; and the possibility

that traces of paint, glass and feces can be used in forensic investigation in 53.7%, 45.3% and 45.3% of students, respectively.

On the remaining KQFNP items, considering the percentage of correct answers, it appears that most students have knowledge about: the concept of forensic nursing; clinical situations with forensic contours; forensic traces; communication and documentation of situations where there is suspicion of a crime; general nursing care and the preservation of remains. On the other hand, they demonstrated to be aware of the importance of the forensic nurse intervention in safeguarding the rights of victims.

In summary, the majority of the students scored with good level of knowledge (40%). The knowledge of insufficient level occurred in 36.3% and the sufficient in 23.7%.

The study results show training needs students on specific forensic nursing practice, being considered by the investigators as supervisors of educational changes that should be promoted.

## 7. Conclusion

The evidences found enhance the need of investment in the training of the students over the forensic nursing practices, particularly concerning the aspects in which reveal a knowledge deficit, enabling them to adopt good practices. This research began the psychometric study of the KQFNP, however, it is recommended the performance of other investigations in order to proceed the validation.

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