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Factors that influence nurses' assessment of patient acuity and response to acute deterioration.

What are the factors that influence the nurses' assessment of patient acuity and their response to acute deterioration?

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Abstract

Background: Nurses play a crucial role in the early recognition and management of the deteriorating patient, (Odell et al 2009, Liaw et al 2011). As they are responsible for the care they provide to their patients. A part of this care is the monitoring of the patient's vital signs such as blood pressure, pulse, respiratory rate, temperature, which are fundamental in the surveillance of health deterioration.

Methods: The aim of this study is to discover what factors influence how nurses assess patient acuity and their response to acute deterioration.

Design: A Generic Qualitative Approach.

Data Collection: Ten nurses currently working within an acute NHS Trust were interviewed using a semi structured approach. The nurses were equally represented from in patient medical and surgical wards.

Results: There were several themes and sub themes identified; the main themes are as follows: (1) Collegial relationships, (2) Intuition, (3) Interpretation of the MEWS system (Modified Early Warning Score). It was recognised that collegial relationships with the medical staff had some influence upon the nurse's assessment as they tended to accept the medical peer's assessment as absolute rather than their own assessment. It was also highlighted that nurses noticeably relied upon the numerical escalation of the MEWS system to identify the deteriorating patient; instead of their own clinical judgement of the situation. Interestingly, the nurses found no difficulty in escalating the patients care to the medical staff when the patient presented with a high MEWS score. The difficulty however, arose when the MEWS score was low which they found incredibly challenging to authenticate their findings.

Conclusion: This study has identified several confounding factors that influence the ways in which nurses assess patient acuity and their response to acute deterioration. The information offered by the nurses provides a crucial step forward to identifying strategies to develop further training.

Background

Effective observation of ward patients is the initial step in detecting and recognising health deterioration. Since the early 1990's, studies investigating the care of the deteriorating patient have consistently highlighted issues in relation to the late recognition of symptoms and subsequent delay in the escalation of care, Schein et al (1990). Further research completed by Hillmans et al (2002) and Mc Quillan et al (1998), reinforced these finding, and together they are referred to as the seminal work within this field. The contemporary literature acknowledges the replication of these themes as illustrated by the following authors, Endacott et al (2007), Odell et al (2009), Cooper (2010), Liaw et al (2011), Mapp et al (2013). Its duplication suggests, the need for healthcare professionals and providers to improve their strategies at preventing and recognising health deterioration in hospitalised patients. This is evident, from the most recent high-profile reports such as: Francis (2013), Berwick (2013), Cavandish (2013), and Keogh (2013). Collectively, they established the need to improve patient safety as they highlighted severe failings in care; along with the lack of compassion in addition to the absence of a patient safety infrastructure. Therefore, improvements in patient safety has become a prerequisite and a high-level priority for all healthcare providers within the United Kingdom (UK). This is being driven by NHS England to ensure

adherence to empirically based protocols to improve patient wellbeing and create a patient safety culture nationally, (CQUIN, 2015, NICE 2016).

Initiatives to improve the care of the deteriorating patient

The development of Medical Emergency Teams (MET) in Australia, Critical Care Outreach Teams (CCOT) in the United Kingdom (UK), and the Rapid Response Team in the United States of America, have influenced patient outcomes by providing rapid response systems, (Lee et al 1995, UK DOH 2000, Berwick et al 2006, Mc Ginn 2011). These systems generate an urgent need to attend to the patient deemed to be deteriorating in health through a track and trigger (T&T) mechanism. Utilising, the Modified Early Warning Score as a tool to escalate concerns commonly referred to as the acronym (MEWS). The correct utility of the T&T system plus a basic understanding and interpretation of the physiological changes is needed to activate this process, (Considine et al 2015, Fasolino & Verdin 2015 Smith & Aitken 2015, Jackson & Penprase 2016).

In many UK hospitals, routine baseline observations are a part of the daily routine for healthcare assistants (HCAs), as recording these vital signs is often seen as a low priority task, (Morrell et al 2016). It is therefore understood that nurses together with HCAs have an enhanced ability to aid early recognition of the deteriorating patient. As they maintain, frequent contact with patients observing their behaviour along with providing consistency of care, (Cooper 2010, Buckley and Gordon 2011, Kleinpell 2012). Past studies however, have demonstrated the inability of nurses to detect patient deterioration which has potentially led to suboptimal care being provided. This has been associated with a lack of knowledge, and inadequate appreciation of the clinical urgency, McQuillan etal (1998), Hillman et al (2002).

Nurses form one of the largest groups of employees who can assess the needs and condition of patients. Consequently, the role of the nurse is crucial in determining and recognising the deteriorating patient; by identifying change and escalating those concerns. Despite this, ambiguities surrounding the responsibility of the trained nurse and the assessment of the patient's acuity remain problematic, (Mc Donnell 2013, Mok et al 2013). The aim of this study is to discover what factors influence how nurses assess patient acuity and their response to acute deterioration. This study will endeavour to identify factors associated with the recognition of disrupted vital sign's. In addition to this, the study will explore how nurses cognitively know or recognise acute patient deterioration.

Methodology

The aim of this study is to discover what are the factors that influence the nurses' assessment of patient acuity and their response to acute deterioration.

Design: A generic qualitative approach

This study investigates nurse's reports of their subjective opinions when caring for the deteriorating patient. Highlighting, their attitudes and beliefs through the reflections of their own experiences. Whilst the data collection shares some similarities with the more traditional approaches, there is a distinct non-allegiance to any, hence a more generic approach seemed the best way forward, (Percy 2015, Kahike 2014).

Data collection methods

Individual interviews were conducted from March to April 2016 by the nurse researcher using a conventional style semi-structured interview. All interviews were recorded digitally each participant was asked to date and sign an informed consent sheet plus, each of the participants were given a detailed

information sheet explaining their participation prior to entry onto the study to comply with the ethical approval.

Population and sample

The target population consisted of (n=10) registered nurses represented from in patient medical and surgical wards currently working within an acute NHS Trust. Purposeful sampling technique, was applied with the intention to include equal numbers of nurses with the same or similar experiences of dealing with the deteriorating patient, (Rubin and Rubin 1995, Patton 1990).

Data Analysis

The audio –recorded interviews were transcribed verbatim and then subjected to a process of traditional content analysis firstly, by the researcher and then secondly by the participants themselves to validate the transcript as a true reflection of the interview. Each participant dated and signed the interview transcript and their comments offered were considered. Thematic analysis of the data was selected as it offers a process that is flexible and compatible with generic qualitative analysis. The themes and sub themes were developed by linking their significance, (Braun & Clark 2006, Percy 2015)

Results

The demographical characteristics of the participants are presented in table (1). The thematic analysis identified several important factors influencing the nursing care of the deteriorating patient, which can be viewed in table (2).

Table 1 (n=10) Demographics of the sample.

Study No	Gender	Date Consented	Area of Practice	Years of Practice	Educational attainment	Previous ALS, ILS, ALERT
P001	Female	20.03.16	Surgical	18 yrs.	Diploma	>1year

P002	Female	21.03.16	Medicine	24 yrs.	Certificate	>1year
P003	Female	21.03.16	Medicine	27yrs	Certificate	>1year
P004	Female	21.03.16	Surgical	8 months	Degree	>1year
P005	Female	23.03.16	Medicine	6 months	Degree	>1year
P006	Male	23.03.16	Medicine	4yrs	Degree	>1year
P007	Female	24.03.16	Medicine	12 months	Degree	>1year
P008	Female	24.03.16	Medicine	8 yrs.	Diploma	>1year
P009	Male	04.04.16	Surgical	11yrs	Certificate	>1year
P010	Female	04.04.16	Surgical	10yrs	Diploma	>1year

Table 2 Themes (n=3) and Subthemes (n=11) identified within the analysis.

Main Themes	Sub Themes
Collegial relationships with medical staff.	**Clinical credibility**
	Competence
The use of nursing intuition	**Confidence**
	Expectation
Interpretation of the Physiological parameter system National Early Warning Score (NEWS)	**Knowledge**
	Communication
	Leadership
	Legality
	Decision making
	Organisational culture
	Knowing the patient

As demonstrated in the above table, several sub themes were also identified within the analysis. These subthemes maintained a fundamental presence throughout the transcripts, due to their repetition from each participant. The results reported will concentrate upon the main themes, the amalgamation of both sets of themes will be presented within the doctoral thesis at a later stage.

Collegial Relationships with Medical Staff

The nurses tended to regard their working relationship with the medical staff as being very close, although professionally dissimilar to the nurses as their responsibilities, skills and knowledge aptitude is different. Some of the nurses within the sample viewed these differences as essentially task-orientated.

P02 *"The junior doc*tors are on the wards to complete the basics of the work, so when you need blood taking, clerking in and medications to take home they would do that, nurses tend to do most of work *with the patients."*

P07 *"The doctors kind of just sort out there own* work, whereas as the nurses we are actually running *the ward."*

An interesting discovery was, some of the nurses seemed to relate to the junior medical staff as assistants in terms of the practical application of the task allocation. However, this appeared to change when discussing their knowledge base and academic achievement as most of the nurses felt the "doctor" as superior to them, rather than contradict those in authority.

P03 *"We have a mutual respect my knowledge is ward based so we work well together I can point them* in the right direction and they respect my experience, they always call the shots their knowledge is far *greater than mine."*

Upon their reflection during the interview the participants were asked "if you had a patient you considered to be deteriorating in health and their MEWS score was 7 or above; but the doctor on the ward said this is fine we already know about this, what would be your action?"

P06 *"I would document I had spoken to the doctor and his/her reply, that's their decision not mine."*

P01 "I have many years under my belt within this speciality I know when a patient is unwell and know *what would happen if I don't act upon it, so I would ask the d*octor to review the patient and document *it."*

It was interesting to see the variation within this response most of which follows the medical staff's decision-making ability, regardless of their level of seniority. Furthermore, the nurses were insistent the doctors document their conversation shifting the responsibility over to the medical staff.

The Use of Nursing Intuition

This theme generated a substantial amount of data throughout the transcripts. The nurses within the sample actively steered towards their intuitive account of the situation to legitimise their held beliefs, actions, and most certainly the first stage in their assessment and recognition of the patient deterioration.

P03 *"I am an experienced nurse with that comes natural intuition, you just know when something is* wrong with a patient, it could be he not as chatty as the day before, he not eating or drinking very well. *There is always something that gives you a clue."*

P09 *"I only have to look at a patient and think, yeah something is wrong although the obs are fine, something is definitely wrong."*

In this part of the analysis some of the nurses were in fact relying solely upon their intuitive observations. Without this, it seemed the ability to defend their assessment became even more difficult to convey to their senior peers.

P06 "You can do obs *and that all yeah like, but you just know the patients isn't right, but it's hard to* get that across, do you know what I mean."

The nurses utilised the MEWS score to authenticate their findings. However, when the score was low it became even more challenging to escalate the patient's care as they could not offer any rationale for this.

P05 *"I have often spoke to the doctor and said this lady is really not right, but her NEWS score is 3* and the doctor just says, if I get time I come and see the patient, but I have a number of things to do *first. You feel stupid sometimes if you're wasting people's time."*

Interpretation of the physiological parameter system National Early Warning Score (NEWS)

The MEWS system is used as the track and trigger system within the Trust and all the nurses were very familiar with the system. Interestingly, nurses appeared to focus upon the numeracy of the system as this strengthened their ability to validate their clinical decisions.

P02 *"I think the MEWS system is good,* even if I thought, ok I have the situation under control now I would still ring the nurse practitioner this is what I have done, they are still MEWS high at the level *they were before, but they will need a look at later."*

P10 *"The MEWS is a god send to any nurse as the doctor has to see your patient with a high MEWS or they will get seen at a MET call."*

Discussion

The findings of this study have identified factors that influence how nurses assess patient acuity and their response to acute deterioration. This has been enhanced by the nurses' working closely with the patients observing their behaviour, general wellbeing and interpreting those subtle changes. Where perhaps this may have been overlooked by other healthcare professionals. (Cooper 2010, Liaw et al 2011, Kleinpell 2012). Consistent with other studies which have explored the relationship between the sense of "knowing" the patient plus the experience of the nurse in dealing with the health deterioration. This combination has been proven to be crucial step forward in identifying health deterioration. (Gazarian et al 2010). The participants within this study alluded to this concept

as one of the sub themes influencing their initial assessment of the patient's condition. Even though they found this position challenging to defend as they tendered to lean towards their intuitive appraisal of the situation.

The recognition of intuition in clinical nursing practice over the past 20 years has raised its profile. This derives from the original works of numerous authors, (Dewey 1958, Polanyi 1962 and Carper 1978), as they describe the fundamental importance of intuition in ways of knowing in nursing. This is characteristically attributed to an "uneasy, gut feeling" about a patient as they expect the patient to "go off" (Benner& Tanner 1987, King & Appleton 1997, Effken 2001, Trueman 2003). The participants in this study, identified features of differences seen with their patient's in terms of patterns of behaviour, such as P07 – "He is normally really, chatty I noticed this day he was very *quiet, even when his family come to visit."* Although, alterations in the patient's behaviour had been observed, the nurses described the difficulty when faced to defend the foundation of these changes. These differences were not perceived as significant to the medical staff as the vital signs all remained within normal parameters.

The participants describe intuition as their "gut feeling", as this is subjective it makes it difficult to meaningfully convey the issues recognised to their medical colleagues. These subtle variations within the patient's vital signs may be due to the compensatory mechanism acknowledged within the SIRS response, (Sandrock & Albertson 2010, Dellinger et al 2012, Meesteer et al 2013, Mc Gloin et al 1999, DOH 2000, Intensive Care Society 2002,). None of the participants acknowledged these changes to substantiate their initial assessment. The participants explained in some detail this would be an arduous and surprisingly challenging task to rationalise these physiological deviations. This required specific knowledge to uphold this position based upon current empirical research, academic knowledge, interpretation of these physiological parameters, and self-confidence in your own clinical ability. In exploring these concerns further, some of the sample viewed the above with some trepidation. As they believed, their level of knowledge would not support their decision-making to authenticate their claim, (Chellel et al 2002, Ludikhuize et al 2012, and Morrell et al 2016). This frustration was echoed by the participants, as they revealed their initial assessment of the patient was in fact accounted for either sometime into the same shift or within the proceeding 24 hours as the patient's health deteriorated.

The nurses it seemed developed close working relationships with the medical staff and expressed this to be harmonious. Throughout history, the nursing and medical profession have evolved within a convoluted relationship often influenced by social status, gender, and power. This is reflected here, when nurses alluded to the doctors as superior and recognised the existence of a hierarchy. This was evidenced by the compliance of the doctor's decision- making regardless of their level of seniority, (Salvage et al 2000, Herbert, 2007).

The nurses' based most of their assessment within the naturalistic domains of empirical works such as intuition and knowing the patient. Whereas, it is well documented medical staff relied upon a defined systematic approach of assessment steeped within academic and empirical medical research, (Carpenter 1995, Svensson 1996, Herbert 2007). This sense of validation appeared to branch from the organisational culture structured around the deteriorating patient. Instances of lack

of recognition or failure to escalate a MEWS breech were mentioned by some of the participants which had resulted in an investigation in the past. The investigatory process utilised within the Trust is Root Cause Analysis (RCA), to highlight the basis of the problem. Some of the nurses, viewed the RCA as punitive and attributing a sense of blame. This emerged from their understanding of societal held beliefs of medical litigation, and their own perception of the existing blame culture within the host Trust. Nurses, were keen to covey the information to the medical staff thus transferring the accountability. This would either corroborate their action or non-action within the organisational culture without any implication to the nurse, (Sweet &Norman 1995, Warelow 1996, Willis & Parish 1997).

The nurses activated a MET call to summon immediate help if needed, aided by the numerical escalation of the MEWS system i.e. a MEWS score > 7. The convenience of this system was identified as a prominent feature. Without exception the nurses relied upon this system to validate their own finding of the patient's health. Therefore, nurses relied upon the MEWS system to aid their decision making. This was achieved by making the most of the numerical scoring classification. In doing so, the nurses were adhering to local policies; whilst on the other hand relinquishing their immediate responsibility to another healthcare professional, (Kyriacos 2011, Martin 2012, and Jackson & Penprase 2016)

Remarkably, none of n=10 participants offered any explanation for the elevation of the physiological parameters. These parameters were essentially used as a landmark to connect the numerical score to the specific vital signs. One of the nurses offered an example to illustrate this system, **P02**: "blood pressure scored 2, pulse scored 3, respiration scored 2, temperature scored 2, *total = 9."* The interpretation of these physiological parameters is a crucial factor, making the difference between suboptimal and the escalation of care being provided as clearly demonstrated within the literature, (McQuillan etal 1998, Hillman et al 2002, Cullinane et al 2005). As described by the nurses' this numerical score authenticated their assessment to escalate the patients care. This appeared to be seamless to the nurses when the score was elevated they would have no problem in their justification. However, when the score was presented low i.e. < 4, the impression was entirely different, leaving the nurses with the laborious task of attempting to defend their intuitive assumption. Numerous authors, have indicated the importance of applying a systematic approach when assessing the deteriorating patient. Therefore, the nursing assessment of the patient is imperative to create an understanding of this acute change in health, (,Sandrock & Albertson 2010, Dellinger et al 2012, Meesteer et al 2013).

Conclusion

This study has identified factors, that influence nurses' assessment of the deteriorating patient. Fundamentally, these issues raised have highlighted many difficulties faced by the nursing staff within the initial assessment process. Which additionally, has accentuated gaps within their knowledge base in relation to the exhibiting signs of patient deterioration. The nurses relied upon their intuitive assumptions coupled with the knowledge of knowing the patient. Furthermore, they had a reluctance to discuss their interpretation of the physiological deviation of these parameters. These, deviations observed in the patient's vital signs are very often alluded to as the initial, "subtle" changes within the literature. The finding of this study questions whether, nurses hold the

knowledge to aid this understanding in the first instance? Is there an assumption that nurses are utilising a knowledge base to aid the interpretation of these vital signs? If so, where does this derive from, intuitive, experiential, theoretical or a mixture of all three?

The practical nature of nursing, loans itself to the ideology of the development of experiential knowledge, in which the sample within this study recognised as essential to the expansion of the nurse's repertoire of skills. Intuitive assumptions within this study were very prominent themes, particularly in the initial recognition of the patient's deterioration. Is the finding within this study a true reflection of intuition being engaged by the sample? Or is this simply a characterisation of intuition being applied due to the lack of knowledge and understanding to explain the deviations observed within the patient's vital signs? Nurses would arguably, be in a stronger position to validate the importance of their intuitive assumptions, if they were to combine this with a knowledge base. In this sense, the nurses understanding would be increased and supplement their reasoning to persuade the medical team to review the patient. This study has recognised a significant gap within the research which warrants further investigation. In doing so, this would provide a meaningful contribution to the existing knowledge base within this field of inquiry.

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