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Research article

Senior nursing students' reflections on deviations from guideline adherence regarding venous blood specimen collection practice: A qualitative study

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ABSTRACT

Background: Venous blood specimen collection is a common procedure within healthcare and both diagnoses as well as treatment evaluation, are often based on results from these analyses. However, studies among both students and staff have demonstrated suboptimal adherence to venous blood specimen collection practice guidelines which in turn might jeopardize patient safety.
Objectives: This study aimed to describe final semester nursing students' experiences of deviations from venous blood specimen collection practice guidelines during clinical training.
Methods: This study adopted a qualitative design. Twentysix final (6th) semester nursing students were recruited through purposive sampling at a Swedish university. Data were collected through semi-structured, face-to-face, focus group interviews in September 2015. The transcribed interviews were analyzed using qualitative content analysis.
Results: The students' experiences generated two categories; 1) Striving to blend in (subcategories Feeling uncomfortable and Adapting to the prevailing practice culture) and 2) Diminished confidence (subcategories Being confused due to inconsistency and Being uncertain about guideline usefulness) forming the overall theme Being a copycat.
Conclusion: The research concludes that nursing students adapt to the prevailing practice culture encountered during clinical training, often at the expense of guidelines adherence. Since the students are being assessed during clinical training, the eagerness to belong to the team and be well-liked might be stronger than the ambition to follow guidelines. As a consequence, nursing students in clinical training might become copycats by aligning themselves with the prevailing practice culture which in turn might jeopardize adherence with VBSC guideline practice and thereby patient safety. With the ambition to support nursing students' learning in clinical training, facilitators of learning to comprise both students and supervisors need to be further addressed.
Tweetable abstract: Nursing students adapt to the prevailing venous blood sample collection practice culture and become copycats.

1. Introduction

The use of clinical practice guidelines (CPG) is important for embedding clinical evidence in practice by bridging the gap between clinical research and clinical practice. They are to some extent evidence-based (Simundic et al., 2018) but usually consensus statements on best available practices, are shown to be cost-effective (Kulkarni et al., 2020) and to enhance patient safety by reducing inappropriate variance in practice (Hessels and Larson, 2016). Venous blood specimen collection (VBSC) is a common procedure within healthcare and a substantial amount of decisions are made based on results from these analyses (Wians, 2009). The procedure is performed by various healthcare professionals, in Sweden often by registered nurses (RN), and in line with the national proposed guidelines in the Handbook for Healthcare (Handbook for Healthcare, Phlebotomy Guidelines), which are almost identical to the Clinical & Laboratory Standards Institute (CLSI) VBSC guideline (CLSI, 2010). Errors in the pre-analytical phase have been shown to account for the vast majority (77.1%) of errors in the total

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testing process (Goswami et al., 2010). Moreover, suboptimal adherence to VBSC guidelines has been demonstrated among both hospital ward staff (Wallin et al., 2007) and healthcare centre staff (Bölenius et al., 2013; Söderberg et al., 2009). Patient identification is a critical step in the pre-analytical phase (Cornes et al., 2019). Therefore, deviations are considered to be serious. In a previous study by the authors (Nilsson et al., 2015), variations in self-reported adherence to VBSC identification guidelines among healthcare centre staff were largely explained by workplace affiliation, which implies that variations might originate from both organizational and work cultures (Bölenius and Nilsson, 2018). A European observational study covering 12 countries demonstrated unacceptably low adherence to VBSC guideline practice in general and identified patient identification and tube labelling as particularly critical steps in need of attention (Simundic et al., 2015). Identification errors often result in repeated testing which in turn also influences the national and international healthcare economy (Hammerling, 2012). Other preanalytical errors include incorrect fasting status, insufficient rest or patient posture (Lima-Oliveira et al., 2017), undue clotting in blood tubes due to prolonged venipuncture, or failing to appropriately mix the tube after collection. Moreover insufficient sample volume and hemolyzed samples (Giavarina and Lippi, 2017) and delayed transportation to the laboratory (De Plato et al., 2019). Hence, adherence to VBSC guideline practice is crucial and must be upheld to sustain patient safety and healthcare finances.

In Sweden, becoming a registered nurse includes acquiring both theoretical knowledges as well as practical skills such as VBSC. The theoretical training, as well as VBSC skills training under the supervision of university lecturers and in line with current guidelines, takes place on campus in clinical skills centres (CSL) (Houghton et al., 2012). Clinical training is situated in various settings where VBSC is frequently practised and supported by clinical supervisors. In a previous study, university nursing students' adherence to VBSC guideline practice regarding patient identification, test request managing and test tube labelling declined with every semester completion (Nilsson et al., 2014) to finally report similar adherence levels as those of hospital ward staff (Wallin et al., 2007) and healthcare centre staff (Söderberg et al., 2009). Moreover, students with a high frequency of research use and high capability beliefs in evidence-based practice (EBP) demonstrated higher levels of self-reported adherence to VBSC identification guidelines (Nilsson et al., 2017).

Pre-analytical errors are not inevitable, and most are preventable. To improve guideline adherence, it is essential to understand the origin of the errors. Considering the indisputable importance of adherence to VBSC guidelines and the need to deepen our understanding of the causes of deviations from VBSC guidelines among university nursing students, *this study aimed to describe final semester nursing students' experiences of deviations from venous blood specimen collection practice guidelines during clinical training.*

2. Research design

For this study, we chose an exploratory qualitative design. Focus group interviews were conducted since the method is suitable when investigating behaviour and motivations, and understanding experience diversity (Morgan et al., 1998).

2.1. Participants and setting

The participants were recruited from a Swedish university by the first author using an open, verbal invitation in class ($n = 78$) in their final (6th) semester. All participants had attended VBSC training in their second semester. Students who were interested in participating were asked to approach the researcher to register for participation. All students who registered their interest in participation were included.

2.2. Data collection

Five semi-structured focus group interviews with 3–7 students per group, four mixed and one female-only were conducted on campus over a period of one week in September 2015. The sessions lasted 80–90 min. The first author (KN) served as a moderator and conducted the interviews. The last author (CJ) served as an assistant moderator to make sure that all participants had the opportunity to speak and that the main issues had been fully covered (Morgan and Krueger, 1998). The interviews commenced with general questions about the students' training in the CSL as well as during clinical practice. Based on our previous knowledge about the topic, an interview guide with two questions was prepared and agreed on by the research team. The first question was: "Do you recall what it was like when you first learned how to perform VBSC in the CSL and during clinical training?" When the students were comfortable with the situation, questions gradually turned to the second question and the theme of the study; deviations from VBSC practice guidelines. The students were confronted with the following key statement and asked to reflect on the subject: "Earlier research show nursing students to increasingly deviate from VBSC guidelines with every completed semester. Could you please reflect on this finding?". The moderator encouraged the students by asking prompting and clarifying questions, such as "What do you mean by…?", "Could you please elaborate…?" or "Such as…?"

2.3. Data analysis

Each interview was audio-recorded and transcribed verbatim by the first author. Randomly chosen transcribed text was checked against the audio recordings to ensure accuracy. The text was subjected to qualitative content analysis which systematically analyses communication, written or verbal (Krippendorff, 2004). The analysis was inspired by the steps described by Graneheim and Lundman (2004) and Graneheim et al. (2017). The first step was to read the transcripts several times to gain an overall impression of the whole. Secondly, using the *R*-package RQDA, units of text relating to the same aspects were identified as meaning units and subjected to condensation, a process of shortening without losing the core meaning. In step three, the condensed meaning units were labelled with codes to enable further abstraction. Relationships and patterns between codes were then identified and sorted into subcategories, which in turn were grouped into categories. Examples of the analysis are presented in Table 1. Out of the content in the categories, a theme was constructed. The respective step was discussed in the research group.

2.4. Ethical considerations

The study was conducted after obtaining approval from the Regional Ethical Review Board (Dnr: 2013-270-31M). All students received written as well as oral information of the objective and aim of the study together with the information that participation was voluntary including the right to withdraw from the study at any point without giving a reason. Furthermore, that participation would not affect their university studies. They were also informed about confidentiality regarding the data. Written informed consent was collected before the data collection.

3. Results

In total, 26 students (21 female and 5 male) participated in the focus group discussions. The participants ranged from 22 to 50 years of age, (Md; 25,5 years, IQR; 24–27 years).

The analysis resulted in two categories; 1) *Striving to blend in* and 2) *Diminished confidence* and four subcategories. The categories were interpreted and formulated into the overall theme; *Being a copycat* reflecting final semester nursing students' experiences of deviations from

Table 1
Examples of the analysis process from meaning unit to subcategory.

Meaning unit	Condensed	Code	Subcategory
It's not always easy to point out or question things as a student, stuff that is incorrect or not quite right. You don't want to question their thinking or comment on how things should be done. At campus, we're told to question things in the clinic, but it's easier said than done. It's hard.	As a student, it's hard to question or comment on the staff's way of performing VBSC.	Students feel awkward questioning practice performance.	Feeling uncomfortable
You might be pretty confident in what you do, but the second it comes to assessment, then you kind of panic. It's completely different to be a student compared to when you're working as an enrolled nurse.	Confident when working as an enrolled nurse, but panic when you're about to be assessed.	Students feel unsure when they are being assessed.	

venous blood specimen collection guideline practice during clinical training in different clinical settings (Table 2). The first reading of the interviews gave the impression that adherence to guidelines was put aside in favour of an adapting process to the surroundings.

3.1. Being a copycat

The overall theme, *Being a copycat* highlights final semester nursing students' experiences of deviations from venous blood specimen collection guideline practice during clinical training. This metaphor not only emphasizes the desire to become a member of the team '*Striving to blend in*', but also the underlying uncertainty about the correct VBSC practice '*Diminished confidence*'. While the students were often aware of guideline content, including correct practice, observing staff and supervisors performing VBSC led them to occasionally deviate from guidelines in favour of the practice of their supervisors. The category '*Striving to blend in*' and corresponding subcategories revealed aspects of how the students felt uncomfortable and tried to adapt to the practice culture in their endeavour to blend in. The category '*Diminished confidence*' and corresponding subcategories revealed aspects of how the inconsistency regarding VBSC performance among the staff made the students confused and uncertain about guideline usefulness and thus diminished their confidence. While some students adapted to the suboptimal prevailing practice, others were able to stand firm and adhere to VBSC practice guidelines.

Table 2
Subcategories, categories, and overall theme obtained from content analysis.

Subcategories	Categories	Overall theme
Feeling uncomfortable	Striving to blend in	Being a copycat
Adapting to the prevailing practice culture		
Being confused due to inconsistency	Diminished confidence	
Being uncertain about guideline usefulness		

3.1.1. Striving to blend in

Students described *feeling uncomfortable* and in a position of dependence during clinical training since they felt a demand to fit in to be accepted and well-liked at the setting. However, the students also trusted, admired, and looked up to the experienced staff and therefore *adapted to the prevailing practice culture* regarding VBSC practice encountered at the unit.

3.1.1.1. Feeling uncomfortable. Feeling uncomfortable was described as feelings of dependency and having one's hands tied since the supervisor also assessed the student. With the ambition not to jeopardize their position, the students did everything in their power to be well-liked and accepted at the unit. They would try to perform tasks quickly not to be considered lazy or slow and to avoid anything that might provoke their supervisor. Whether or not the students had the courage to ask questions about performed procedures depended on the perceived attitude of the supervisor since some supervisors gave the impression of being offended when questioned. Therefore, and to avoid being considered as they were trying to lecture the staff, the students sometimes hesitated to ask or comment since it might 'backfire' on them in the end. If they eventually raised enough courage to ask, the students made sure they expressed themselves in a way that would not annoy their supervisors.

> You're anxious about your clinical training and you don't want to make enemies as it might affect the assessment, you know, me being a nagging student might affect the assessment.
>
> (Focus group #3)

> Sometimes, I would even ask questions as if I didn't know, as if I was a bit stupid, just to point out that the procedure was not performed correctly.
>
> (Focus group #5)

3.1.1.2. Adapting to the prevailing practice culture. The students described how the clinical setting often was perceived as the 'real world' and the practice performance superior to the practical skills taught at the CSL. The students admired the experienced staff's confidence and skills in performing VBSC, even though the procedures occasionally deviated from clinical practice guidelines. With the ambition to act like the experienced staff and the conclusion that suboptimal practice still seemed to work, the students realized they too occasionally deviated from guidelines. Regardless of whether the supervisors adhered to clinical practice guidelines or not, the safe feeling in doing as everyone else influenced the students to copy the behaviour of others and change their practice performance over time. The students also observed newcomers among the staff to adapt to the prevailing practice relatively quickly at the unit. The students talked about the power of habit and the perceived slow transition from guideline adherence to suboptimal VBSC practice. Hence, both the students and new staff tended to copy the habits of their supervisor/co-worker. The students reflected on the fact that the sense of belongingness might be more important than adhering to guidelines, even though the prevailing truth might not be in line with guideline adherence.

> You really try to follow the guidelines but at the same time, I think you learn from the more experienced staff.
>
> (Focus group #2)

> It's like the game Chinese Wispers. You pass on information, or in this case – habits, from one person to the next. Gradually, the habits change little by little. Over time, the changes might be substantial, although each step is considered insignificant.
>
> (Focus group #1)

3.1.2. Diminished confidence

During clinical training, the students had to deal with and relate to the numerous ways of VBSC practice procedures encountered. Watching the different procedures gave rise to thoughts of *inconsistency* and *uncertainty about guideline usefulness*, which in turn contributed to diminished confidence in both their knowledge as well as in guidelines usefulness.

3.1.2.1. Being confused due to inconsistency. During clinical training, the students were subjected to both VBSC practices in line with guidelines and non-adherent practices. They talked about how they knew the correct procedure, but how the accuracy became less pronounced over time. Moreover, with every new, more advanced clinical procedure encountered, VBSC became seemingly less important, which in turn decreased the tendency to check VBSC guidelines in favour of those considered more advanced, such as blood transfusion or handling central venous catheters. Even though they were familiar with the importance of guideline adherence, the different ways to carry out VBSC made them somewhat confused. Occasional deviations from VBSC guidelines made by lecturers during training at the CSL also added to the confusion which eventually led the students to doubt their knowledge.

> It's much more difficult to remember the correct procedure when you're exposed to lots of other ways.
>
> (Focus group #1)

> Some units seem to create their own set of rules about how to perform VBSC, which is a bit confusing.
>
> (Focus group #4)

3.1.2.2. Being uncertain about guideline usefulness. The students perceived the clinical practice generally accepted in the clinical setting, i.e. the prevailing truth, to occasionally interfere with VBSC guidelines. Since they were not aware of any near misses or adverse events, the students assumed that both adherence and non-adherence to clinical practices guidelines were sufficient. For example, the students watched their supervisors occasionally skip certain procedures related to guideline adherence, such as patient identification, with the reason that they already knew the patient, and therefore it was not necessary to ask for ID. Hence, the students realized that experienced VBSC staff approved cutting corners as they more or less routinely skipped guideline procedures. This led the students to become uncertain about guideline usefulness.

> They (the staff) have found a way to perform VBSC which works even though it's not in line with the current guidelines.
>
> (Focus group #4)

> As a student, everything around you impacts you. So, when the supervisor tells you to do as you've been taught, not the way she does, you kind of wonder what to do. Their (the supervisors') way still seems to work just fine.
>
> (Focus group #5)

4. Discussion

The findings of this study highlight nursing students' experiences of deviations from venous blood specimen collection practice guidelines during clinical training. Previous studies have explored facilitators and barriers to adherence to clinical practice guidelines. This is the first study in Sweden to explore the student experience concerning VBSC. In the present study, the result generated two main categories: *Striving to blend in* and *Diminished confidence* forming the overall theme *Being a copycat*.

While attending clinical training, the students are subjected to a professional socialization process (Lee and Yang, 2019), which continues after graduation (Bisholt, 2012). Factors that contribute are for example the sense of belonging and the development and internalization of a professional identity (Zarshenas et al., 2014). In the present study, results indicated the presence of a professional socialization process, for example in the way the students strived to adapt to the prevailing VBSC practice culture and how they more or less deliberately copied the practice of their supervisors. In comparison, graduated RNs and other healthcare staff also tend to adapt to the VBSC practice performed by their peers in a specific setting (Nilsson et al., 2015), which indicates that they are largely influenced by group practice, occasionally even to a greater extent than the ambition to adhere to guidelines in case of contradiction between the two. The students in our study acted copycats by aligning themselves to the prevailing practice culture encountered in the setting. Earlier findings support this by suggesting that nursing students in clinical practice are under a substantial amount of stress (Del Prato et al., 2011). It is reasonable to assume this phenomenon, also identified in the present study, to stem from the power of balance where the students were in a position of dependence and cautious not to do or say anything that might jeopardize their marks since the supervisor's power was considered to be large (O'Brien et al., 2019). These findings address the importance of the approach of the supervisor. In a review, Perry et al. (2018) point out the impact of certain nurse behaviour such as empowerment, supporting and increasing student self-efficacy and trust linked to increasing and staged independence since they significantly influence students' accountability for learning and thereby their ability to adequately prepare themselves for professional nursing practice. Other facilitators considered to be highly influential to learning in the clinical context are availability, approachability and feedback from the clinical supervisor (Sweet and Broadbent, 2017). The results reveal students' occasional hesitance about asking questions, a scenario definitely within the framework of the facilitator 'approachability'. Thus, the students might have experienced lacking approachability, unsatisfying support for self-efficacy and empowerment or lacking availability and feedback from their supervisors. On the other hand and according to the findings of Lee et al. (2018), other factors besides interpersonal and individual dynamics might have influenced the student's learning in clinical contexts, for example organizational.

The results show the students' eagerness to blend in with the prevailing practice culture, to belong and to be well-liked, simultaneously as they experienced inconsistency in practice performance which led to uncertainty about guideline usefulness. A recently published scoping review suggests similarly that belongingness facilitates the professional socialization process and is also a key factor for student retention since it impacts both performance and well-being (Vivekananda-Schmidt and Sandars, 2018). Presumably, by doing as everyone else, i.e. being a copycat, some of the students in our study improved the likelihood of being well-liked and accepted by the team regardless of whether the students agreed with the practice performance. However, not all students are reported to adopt 'copycat' behaviour. Liljedahl et al. (2016) found that students were reluctant to assimilate to the workplace when their basic values did not align with those enacted by the workplace. Thus, the reason appears to be two-fold: Some students tend to align with the practice of the group even if it runs counter to their conviction, others do not. Wallin et al. (2012) found high capability beliefs in EBP to be associated with more frequent research use and implementation of evidence in clinical practice. The findings of Wallin and colleagues are in line with the results in Nilsson et al. (2017) in which nursing students with higher capability beliefs regarding both EBP and academic abilities were more likely to adhere to VBSC identification guideline practices. In the present study, it is reasonable to assume adherence to guidelines also originated from different levels of capability beliefs. Hence, by strengthening capability beliefs and the use of research in clinical context among nursing students, the opportunity to improve guideline adherence might be feasible. Other possibilities to withhold or improve VBSC guideline adherence might be the inclusion of a study course that

predominantly handles the pre-analytical phase designed specifically for nursing students (Dal Yılmaz and Yılmaz, 2019). Moreover, address supporting factors for learning in a clinical context such as a sense of belonging, reflection, preparations, motivation and trust (Nyqvist et al., 2020).

The levels of adherence to clinical practice guidelines during clinical training vary, as does the quality of the supervision. As the university representatives and to ensure clinical training quality, we must take into consideration the diverse situations students are put in, preferably by collaborating with representatives for the clinical settings. Educators have a limited impact on the prevailing practice culture. Still, the possibility to influence and empower the students before the clinical training period starts remains. For example, the knowledge about the pre-analytical procedures among last year nursing students is possible to improve (Dal Yılmaz and Yılmaz, 2019). Hence, with the ambition to enhance patient safety, students should be encouraged and supported to adhere to best practice, to rely on guidelines, to stand up for correct behaviour and to be courageous enough to discuss practice issues in the clinical setting without having to consider their assessment. Moreover, they must be given sufficient tools to manage the balancing act between demands and practice during theoretical training and the perceived demands of alignment with the prevailing practice culture during clinical training (Henderson et al., 2018). By providing the nursing students with sufficient tools, such as they might be better prepared and equipped to deal with the dilemmas that characterize non-adherence to guidelines and thereby enhance patient safety.

4.1. Methodological considerations

The focus group interview design was considered a strength of the study since it is suitable for clarifying experiences and perceptions related to a specific topic using the group dynamics to generate deeper and richer data than obtained from individual interviews (Rabiee, 2004). Also, to avoid dominance in certain students and to ensure that all had the opportunity to speak, the group discussions were conducted with a moderator and assessor, which strengthened the study. The number of participants in some of the focus groups might be considered a limitation. However, as the interest in the topic influences the willingness to share experiences and increased opportunities to talk (Morgan and Krueger, 1998) as well as benefits owed to a more intimate climate (Toner, 2009), the number of students was considered enough. Hence, all focus group interviews were perceived as rich, regardless of the number of participants.

Content analysis was considered to be an appropriate method for analyzing the interview data (Graneheim and Lundman, 2004). Efforts were made to describe the process of analysis as trustworthy by illustrating how meaning units, condensations, codes were made and findings were presented with representative quotations. To ensure consistency of the findings, regular discussions were held in the research group where the steps in the analysis, the construction of subcategories, categories and theme were discussed. The fact that all interviews were conducted in Swedish, whereas we used English during the analysis process is a limitation of this study. Struggling to find the right words and clarify meanings might have affected the interpretations of the data.

Regarding transferability, this study was limited to nursing students at a single Swedish university and their clinical training in Swedish clinical settings. However, we believe that the findings may be transferable to students attending university nursing programmes at other Swedish universities and also possibly students in other countries.

5. Conclusion

Nursing students in clinical training act copycats by aligning themselves with the prevailing practice culture which in turn might jeopardize adherence with VBSC guideline practice. The sense of belongingness to a specific group was often stronger compared to the ambition of guideline adherence which might have diminished their confidence in VBSC practice guidelines. Moreover, students agreed on the occasionally uneven power of balance between supervisor and student contributing to perceptions of less supervisor availability and approachability, both considered barriers to learning. With the ambition to support nursing students' learning in clinical training, facilitators of learning to comprise both students and supervisors need to be further addressed and discussed.

List of abbreviations

VBSC venous blood specimen collection

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Karin Nilsson: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Data curation, Writing - original draft, Writing - review & editing, Visualization. **Christine Brulin**: Conceptualization, Writing - review & editing, Funding acquisition, Project administration, Supervision. **Kjell Grankvist**: Conceptualization, Writing - review & editing, Funding acquisition, Project administration, Supervision. **Christina Juthberg**: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Writing - original draft, Writing - review & editing, Visualization, Supervision.

Declaration of competing interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.nedt.2022.105375.

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