

ABSTRACT

Objective: This study sought to understand the effects of a pedagogical resource combining a multi-moment debriefing model with reflective journaling that is designed to develop reflective competence.

Design: A qualitative educational study was used with an instrumental case study design. Participating in the study were 32 nursing students who wrote 96 individual reflective journals in accordance with each moment (M1, M2, M3) of the proposed reflective practice resource. The journaling was conducted during both the clinical simulation activity and the period of clinical practice.

Methods: The reflective journals resulting from the high-fidelity clinical simulation process were used to explore three moments of learning: debriefing immediately after simulation, post-scenario debriefing, and clinical practice. The typology of content analysis used was classical content analysis, which followed a deductive logic, since to assess reflection levels the 5Rs Reflective Writing Scale was used.

Results: In the post simulation moment (M1), students produced a greater number of meaningful units associated with a level of strategic narrative reflection. During clinical practice however reflection was more analytical, with the highest level of reflection.

Conclusion: Nursing students developed reflective competence through an iterative process of reflective practice establishing a continuum between simulation experience and clinical.

Keywords:

Reflection; Nursing; Education; Simulation; Reflective practice; Clinical practice.

DEVELOPING REFLECTIVE COMPETENCE BETWEEN SIMULATION AND
CLINICAL PRACTICE THROUGH A LEARNING TRANSFERENCE MODEL: A
QUALITATIVE STUDY

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INTRODUCTION

Teaching should be an intentional practice that helps students' progress and socialization in the process of learning and building knowledge (Cárdenas, Monroy, Arana, & García, 2015). Accordingly, effective preparation cannot be based solely upon scientific-technical training; it must emerge and converge in practice and in the reflective process (Schön, 1987). Effective professional learning is predicated on personal experience of concrete real-world situations (Korthagen, 2010), but action alone does not generate learning; it calls for reflection to achieve generalization and application (Leal et al., 2014). Undoubtedly, an inquiring mind allows for the construction of grounded practical knowledge (Domingo & Gómez, 2014) and its reflection focuses on both a critical analysis of knowledge and the feelings and emotions generated (Bulman, Lathlean, & Gobbi, 2012). For this reason, academic reflection in higher education must be purposeful and integrated within the knowledge of the discipline, providing a bridge between experience, generalization and best practice (Ryan, 2013). Thus reflection must be introduced into the training of nursing professionals (Cárdenas et al., 2015).

Because reflection is multi-faceted, it can be taught and nurtured using a range of strategies (Epp, 2008). However, reflection should not be considered as a complementary activity; it should be integrated and synergistic with learning objectives (Aronson, 2011). Thus, the pedagogical strategies have to strengthen students' predisposition and motivation for reflection (Karimi, Haghani, Yamani, & Najafi Kalyani, 2017).

At present, Clinical Simulation (CS) is widely viewed as a valid teaching strategy that promotes competence development in nursing students (Cant & Cooper, 2017; Oh, Jeon, & Koh, 2015; West, Usher, & Delaney, 2012). One of the core elements of CS is debriefing, which has great potential for learning around analysis of, and reflection on the clinical

scenario (Al Sabei & Lasater, 2016; Dufrene & Young, 2014; Hall & Tori, 2017; Levett-Jones & Lapkin, 2013; Maestre & Rudolph, 2014).

Nursing education is grounded in the use of multiple strategies to teach students and assess their learning (Mee & Schreiner, 2016). One such strategy entails the writing of an individual reflective journal, which offers the students the possibility of framing the experience by turning it into a story (Zabalza, 2002) which becomes a core element that supports and lends continuity to the reflective process (Olate & Castillo, 2016). The student progresses from descriptive levels of reflection to reconstructive ones facilitating a deep and active learning (Roca, Reguant, & Canet, 2016), as the student narrates a personal experience, independently reflects, and clarifies elements of the existing theory (Dahl & Eriksen, 2016). In short, reflection has the potential to enhance nursing practice (Caldwell & Grobbel, 2013; Farrington & Townsend, 2014; Taylor, 2010).

For its part, the development of reflective competence promotes the ability to resolve practical and professional situations; deeper articulation between theory and practice, formal and practical knowledge; scientific criteria as well as ethical and social commitment; and greater methodological preparation to innovate and investigate (Domingo, 2009). It is also important to note that promoting a rethink of reality makes us more aware of what we are doing (Cárdenas et al., 2015).

Consequently, the research aim was to assess nurses' reflective learning in the context of simulation and clinical practice, developed through a pedagogical resource that combines a multi-moment debriefing model (M1 immediately after simulation, M2 at one-month post simulation, and M3 during clinical practice).

OBJECTIVES

The overall objective was to understand the effects of the proposed pedagogical resource on the development of nursing students' reflective competence.

The specific objectives were: 1) To establish levels of reflective thinking shown by students by way of the 5Rs Reflective Writing scale in three moments (M1, M2, M3); 2) To describe the overall evolution of the five levels of reflection; 3) To analyse the students' evolution according to their levels of reflection and the highest level of introspection acquired; 4) To identify the concurrences of the different levels of reflection in the reflective journals.

METHODS

The comprehensive nature of the objectives as well as the multidimensionality and complexity of the educational act and the development in the students' reflection called for a qualitative approach to the study. The research design was an instrumental case study (Stake, 2010). The essence of the case itself was important, but the most fundamental aspect of it was to ascertain how the pedagogical resource worked in the development of reflection in this and similar settings.

Context and participants

This research framework was set within the framework of Adult Nursing in the second year of the Nursing Degree, where CS is used as a training strategy. The participants were all students in one class group comprising 32 students, which multiplied by the three moments resulted in 96 journals. All the participants executed the simulation in its three phases (prebriefing, scenario, debriefing) and delivered the journals at the three planned moments. There was no attrition rate of participants.

A high-fidelity simulation was undertaken with a standardized patient. The clinical simulation process followed the standard prebrief, scenario and debrief components. The briefing set up was in groups (16 students in 2 groups) and was intended to give information and resolve doubts about objectives, context, human and material resources (Duration 30-45'). The simulation scenario experience was individual (Duration 8-10 ') and finally, the immediate debriefing was in groups (8 students in 4 groups) with feedback of the teacher and

the rest of the students (Duration: 10' per participant). The simulation was articulated around two clinical cases elaborated using the Harvard-type case technique from which 16 different scenarios were derived. The cases were contextualized in the hospitalization area using a double room (one bed for each case) and the nursing control area.

This research made use of an innovative 3-learning moment process: M1, or debriefing immediately after simulation, conducted with the facilitator and the participants; M2, or post scenario debriefing, carried out one month later with the viewing of the scenario assisted by the facilitator; and M3 during the clinical practice where the student reflected individually without the assistance of a facilitator. In the 3 moments, the students wrote an individual journal in which he or she was asked to use four dimensions: explore the action experienced in the simulation in a multidimensional way (theoretical and practical knowledge, emotions, cognition). In moment M1; reconstruct the action by watching the simulation again (exploration of the action is stimulated in greater depth) and come up with possible alternative courses of action (preparing new courses of action). In moment M2; apply them in the professional context (performance and evaluation in a real context). So in moment M3; the student had developed an iterative process of reflective practice that gradually transitioned from the simulation experience (M1) to clinical practice (M3).

The team of teachers created a protocol for the implementation of the simulation and for the reflective journal which were later translated into two dossiers for the students, both of which detailed general aspects such as competences to be developed and expected learning results, methodology and evaluation. Although the one for simulation reported on cases in the format of clinical medical and nursing records, more documentation such as complementary tests, etc was included. In the second, aspects of the preparation of the journals were detailed (writing guidelines, format and delivery schedule) and the 4 dimensions previously described by moments, explored. The journal was another documentation of the evaluation process, an

element that reinforced learning and its preparation was an essential requirement. The focus of the evaluation was placed on the simulation (rubric) and the clinical practices. In the journal, the coherence of the contributions, the argumentative capacity and the relationship between theory, simulations and clinical practice were assessed as evidence of learning.

Data Collection

The use of individual reflective journals served a dual purpose: to encourage reflection as part of the resource and to record personal narratives about what happened to the phenomenon under study. As such, the journal provided the source for identifying the development of the students' reflective competence. The journals were written over a 4-month period, beginning December 2017, during the CS, and finishing in March 2018, the post clinical practice period.

Data Analysis

The Classical Content Analysis (Leech & Onwuegbuzie, 2007), supported by Atlas-ti 8 software, was used to analyse the texts. This type of content analysis made it possible to count the occurrences of the codes produced deductively. The categories of Bain, Ballantyne, Colleen, & Lester (2002): 5Rs Reflective Writing Scale, were used to assess reflection levels. The choice for this model was because: it uses hierarchical dimensions (Ryan, 2013), it includes reflective analysis of feelings and emotions generated (Bulman et al., 2012), and it shows mutually exclusive and well defined levels. These dimensions facilitated an exhaustive and precise analysis of the documents shown in the examples included in Table 1. The analysis by levels allowed for a distinction to be made between strategic reflection and analytical reflection: if students only write the journals from a strategic viewpoint, low-level statements are obtained, and if students learn from experience, levels of greater depth are expected (Boutet, Vandette, & Valiquette-Tessier, 2017).

Table 1. Hierarchical level of reflection, Bain et al. (2002)

The levels of reflection in the journals were identified by 4 independent researchers, who subsequently came to an agreement, thus corroborating a high coincidence. In the units of analysis in which there was no coincidence in the codification, the different arguments were presented, reaching an agreement in most of the cases. On the occasions there was no agreement, they were analyzed again in the context of the specific journal. Following identification, several analyses were undertaken to understand the development of the reflection by moment, by level of reflection, and by student. Thus, the research met the criteria of scientific rigor proposed by Ruiz Olabuénaga (2012), assuring credibility, conformability, dependence and transferability.

Ethical Considerations

This study was approved and financed as a teaching innovation project by the Faculty of Nursing and Physiotherapy of the University of Lleida (Spain). Informed and written consent was requested from the participants. Data confidentiality and anonymity were ensured throughout the process by assigning an alpha-numeric code to each document.

RESULTS

The results were derived from the 96 reflective journals compiled by 32 mainly female nursing students, (M 12.5% vs. F 87.5%) aged between 19 and 32 years, with an average age of 20 years. The majority of the students, 29 out of 32 (90.6%), had studied baccalaureate level, and all of them had prior experience in both simulation and reflective journaling.

Levels of reflective thinking by moments of learning

Levels of reflective thinking were established through the evidence shown in the journals written in the 3 moments of learning (see Graphic 1).

Graphic 1: Rates of reflective evidence by learning moment

In M1, immediately after the clinical simulation, 444 meaningful units were inferred, the greatest number of which was R1 (157; 35%), decreasing progressively in the other levels of

reflection R2 (104; 23%), R3 (83; 19%), R4 (74; 17%) and R5 (26; 6%). Most of the students wrote a strategic descriptive narration. The description of the emotions experienced during the simulation and their effect on the actions carried out was also qualified; *"During the simulation, I felt extremely insecure, constantly jittery, pressure from the environment and from myself"* (P29:M1R2).

In M2, at one month post-simulation when the simulation was watched, 152 meaningful units were yielded. The same amount of evidence was observed in reflection levels R1 and R2 (28; 18% each), with R3 producing the largest amount of evidence (56; 37%), followed by R4 (33; 22%), and with R5 showing little evidence (7; 5%). The rise in R3 showed how the student was able to draw inferences between theory and practice during the simulation. Learning clashes were observed where students examined their own knowledge by linking it to new theoretical-based knowledge; elements of discrepancy between what the students' "need to know" and what they "really know" were revealed. *"On the administration of analgesia, I identify the most serious mistake made in my simulation [...] I forget to put on gloves, increasing the risk of infection from the patient by not using sterile techniques in the manipulation of the pathway. Therefore, despite having all the necessary knowledge to perform the technique correctly, I focused my attention so much on the technical part that I completely forgot about patient safety"* (P21:M2R3).

In M3 (clinical practice), 229 meaningful units were identified spread over the 5 levels of reflection. The results are shown according to the percentage of occurrence: R5 (73; 33%), R3 (56; 24%), R2 (51; 22%), R1 (25; 11%) and R4 (24; 10%). This suggests that clinical practice helped to raise the level of reflection because the student was able, through his or her discourse, to draw conclusions, elaborate or describe a new plan of action, leading to a high level of situated and reflective learning; *"...the importance of ensuring a proper order when performing a technique. This assures professional safety, safety that'll subsequently be*

conveyed to the patient, who will therefore feel that that person is monitoring his or her state of health" (P13:M3R5) or "I have experienced situations in clinical practice that required exposing a great deal of the patient's body, making the patient feel uncomfortable with the situation, so I have taken this point into account in every action in the clinical practices, recalling it as if it were an 'echo' (P14: M3R5).

Overall evolution regarding the 5 levels of reflection

The evolutionary patterns of each of the levels (R1, R2, R3, R4 and R5) were established successively, in doing so, 825 meaningful units were analysed (see Table 2).

Table 2: Frequencies and percentages by 5Rs Reflective Writing Scale levels of reflection of meaningful units

Reporting R1 was based on the students' descriptions of the situations they experienced. These occurred mainly in M1 (157/210; 75%) and were residual in the rest of the learning moments (M2:28/210; 13% and M3: 25/210; 12%). The impact of the simulation led the students to do an exercise to identify what had happened, giving details of the situation and the emotions that had emerged.

In Responding R2, emotional reactions were also very present, mostly in M1 (104/183; 57%) and M3 (51/183; 28%). The emotional reaction to the experience appeared in all the journals and in the three learning moments, but showed greater relevance to the experiential situations such as simulation (M1) or clinical practices (M3).

The link between theory and the student's experience was established in Relating R3, This was evident in the three learning moments, although more frequently in M1 (83/195; 42%), which may be due to two reasons: first, the reflective journal as an evaluative element of learning implicitly demands a connection with theory; second, post-simulation debriefing took place immediately after the action, and was done with a teacher/facilitator who can strengthen the interrelation between theory and practice.

Reasoning R4 was tied to inquiry or the search for explanations, and moment M1 was again the learning space that most prompted this level of reflection (74/131; 57%). It is worth mentioning that the students described the action, but gave less attention to questioning or explaining what had happened.

Reconstructing R5, the highest level or analytical reflection, was most evident during the clinical practice (73/106; 69%). Some students in M1 reached this level of reflection (26/106; 24.5%). In contrast, post-simulation debriefing (M2) showed the lowest percentage (7/106; 6.5%). This evolution was repeated in the whole group of participants (see Graphic 2).

Graphic 2: R5 evolution by learning moments

Finally, the overall analysis of the level of reflection (without considering M1, M2, M3) revealed that the first three levels were used most by the students, with similar percentage occurrences (R1-25%, R2-22% and R3-24%). It was also noted that the highest levels of reflection, and therefore of higher thinking, were less present in the journals (R4-16% and R5-13%).

Student group behaviour according to levels of reflection and their highest scope of introspection R5

Differences among the students were observed in the frequency with which they used the different levels of reflection, as were the distribution of these levels in their evolution in the moments. The student who used reflection most often did so on 49 out of 825 meaningful units. This same student also used the highest levels of R4-R5 reflection on the greatest number of meaningful units (18 times), of the entire group.

The student demonstrating the lowest number of reflections in his accounts did so only 16 times. This exception aside, the rest of the group used more than 21 examples of reflective practice in their journaling. It was not possible to find any evolutionary pattern in the level of reflection, which could be linked to the students who reflected more often.

It should be noted that 9 students (28.1%) failed to reach the Reconstructing R5 level of reflection. The remaining 23 students (71.8%) did so with the following distribution: one reached it 10 times; five, 6 times; eight, 4 times; eight, 2 times; and one only 1 time.

The assessment of the evolution in the students' reflection level during the three learning moments showed that 14 students increased the number of times they used the highest reflection level (R5), from the immediate reflection after the simulation (M1) to clinical practice (M3). The journals of each student showed that in no case was the final reflection level of R5 lower than the initial one.

In addition, 17 students showed no evolution relative to the degree of depth of their reflections, i.e. the levels of maximum reflection were maintained from the beginning of M1 to the end of M3.

Concurrencies by levels of reflection

The analysis of the concurrences between reflection codes shows that R2, the emotional or personal reaction to the experience, was present at the highest levels of reflection (R4 and R5). The concurrence of sensitive and personal elements linked with deeper inquiry, with questioning and seeking explanations; *"The simulation has given me different points of view about how to cope with each situation in different ways, which has helped me to be to keep calmer and safer during practice with patients and relatives" (P30.M3R4).*

The students linked the most emotional reflection (R2) with the theory (R3) when seeking an explanation as to what happened in the simulation scenario. The student's experience helped them to establish the link with theoretical knowledge; this process took into account emotional elements, such as confusion, apprehension, fear, which emerged as motivational vectors of learning; *"I couldn't correctly assess the patient either because the situation made me nervous, as he was continuously suffering from acute chest pain, which could have been*

coronary in origin and serious, but I mistook it for stomach pain because his medication coincidentally prescribed a stomach protector " (P15 M1R3).

Likewise, the R2 level fell from 57% in M1 to 28% in M2, again gaining relevance in the journals during clinical practice (M3 together with R5). Clinical practice experience offers students the opportunity, first-hand, to mobilise their skills through action learning. *"Simulation has made me more confident when dealing with the situations I have encountered in clinical practices in the hospital, as it has allowed me to make mistakes without putting the patient's safety at risk, and I've been able to reflect on and learn from them by providing a solution and following good practice in similar situations."* (P31.M3R5).

DISCUSSION

The strategies pursued to develop reflective practice can make the difference between the success or failure of a nursing student's advance (Caldwell & Grobbel, 2013). The pedagogical resource proposed in this research combines a multi-moment learning model (M1, immediately after simulation; M2 watching the simulation month later; and M3 during clinical practice) with the writing of an individual reflective journal. The results show that the resource effectively facilitates a systematized reflection that, according to Wighus & Bjørk (2018) is a key component in reflective skills development.

Through reflective learning, the multi-moment model links theory with practice, two elements that are sometimes dichotomous in university education (Thompson & Pascal, 2012). The prompting of reflection surmounts this difference by presenting it in an integrated, expanded and improved way (Clarke, 2014). In addition, it combines two learning scenarios par excellence: simulation and clinical practice. According to Rivera & Medina (2017), contextualization pedagogies boost student's reflexive thinking processes. This study shows how students can explore, reflect on and learn from their own experience through a significant incident in their training (clinical simulation). Henceforth, the iterative process of

reflection allows the student to reconstruct the incident and develop alternatives to cope with a similar one in the future (clinical practice). Accordingly, it enables a continuum between simulation in a context and at specific time with professional nursing interventions in clinical practice. It is also worth pointing out that the student begins the reflective journal once the immediate post-scenario group debriefing has finished, a process that combines both verbal and written reflective practice strategies (Dubé & Ducharme, 2015).

Furthermore, the results presented here regarding the practice of reflective journaling are consistent with findings in other studies where students acquired high reflective levels beyond descriptive or strategic narratives (Boutet et al., 2017) and that these levels promote self-awareness and understanding (Lestander, Lehto, & Engström, 2016). The highest level of Reconstructing R5 was mostly inferred during clinical practice (M3), where it yielded narratives that Boutet et al. (2017) call strategic. This could be explained by different reasons: that prior reflective journaling allowed the acquisition of this level, that the preceding moments (M1, M2) prepared the student for this level or that the student's experience in real contexts was the fundamental vector of significant learning. Therefore, in the light of the results, reflective writing should be implemented transversally as it improves journaling in the degree programs when combined with training (Dubé & Ducharme, 2015), which would lead to higher levels of development. Moreover, journaling provides teachers with valuable process information (Boutet et al., 2017), and it can be a cathartic activity in complex situations (Caldwell & Grobbel, 2013).

The pedagogical resource presented in this research commits to the connection between experience and knowledge. Students' competence and skills improve when they are able to reflect on critical incidents or events of daily practice (Andersen, 2016; Yu, Ling, & Hu, 2019). Reflection is founded on the basis of self-regulated learning, which brings together students' perceptions of how reflective methodology has relevance in understanding their own

actions and emotions (Fullana, Pallisera, Colomer, Fernández, & Pérez, 2013). Reflection includes both the critical analysis of knowledge and of feelings and emotions (Bulman et al., 2012). Responding R2 level was linked to all learning moments and concurred with the different levels of reflection. Thus, reflection helps to channel emotions and feelings, and to cope with experiences (Caldwell & Grobbel, 2013). The student creates awareness by interrelating knowledge and emotion (Korthagen, 2010). The results show that the emotional impact is more evident immediately after the simulation (M1) and in clinical practice (M3), and that it would be beneficial to further probe this level during learning processes. Recognition of the influence of emotions enables assimilation of concepts that will have a direct impact on decision-making in clinical practice. Goleman (2011) supports the relevance of the knowledge of emotions, the ability to manage them and to adapt them to actions, which helps not only to understand feelings but also to assimilate practice (Caldwell & Grobbel, 2013).

M2, in contrast, was observed to have had the least impact on student reflection. The viewing of the video did not appear to increase the level of reflection, which appears to contradict the benefits expounded in other studies (Ali & Miller, 2018; Zhang, Mörelius, Goh, & Wang, 2019). Thus, student empowerment consists of building confidence to create an awareness of their resources, skills, alternatives and, ultimately, the weighing up their decisions. This requires teachers to transfer power to students (Mulens, Consuegra, Castellanos, & Ayala, 2016).

CONCLUSION

Nursing students develop reflective skills through an iterative process of reflective practice establishing a continuum between simulation experience and clinical practice. The highest levels of reflection were observed during clinical practice. Thus, reflective journaling is considered to be a practice that enables the interrelation of knowledge and emotion.

Study Limitations

It is difficult to grasp a reality as complex as reflection through narrated discourse, since it is impossible to separate the student's narrative abilities from what they reflect. This study highlights an educational reality based on a first case analysis, although it calls for further in-depth research on the most relevant findings per student. The broadening of the study population over time is also seen as a conditioning factor. These two limitations are recorded in the continuation of this study.

Conflict of interest

The authors have not manifested any conflict of interest.

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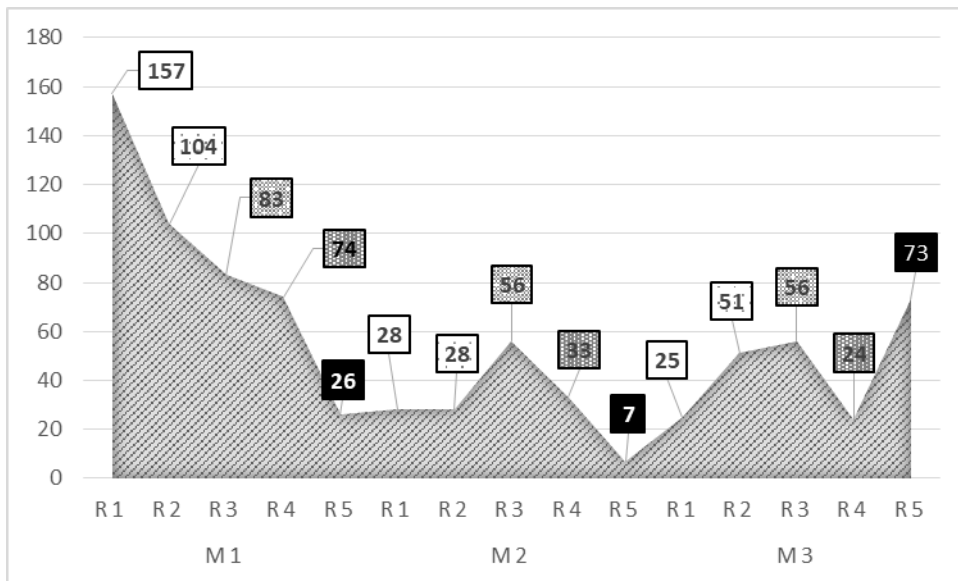
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Graphic 1.

Rates of reflective evidence by learning moment.



Graphic 2.

R5 evolution by learning moments.

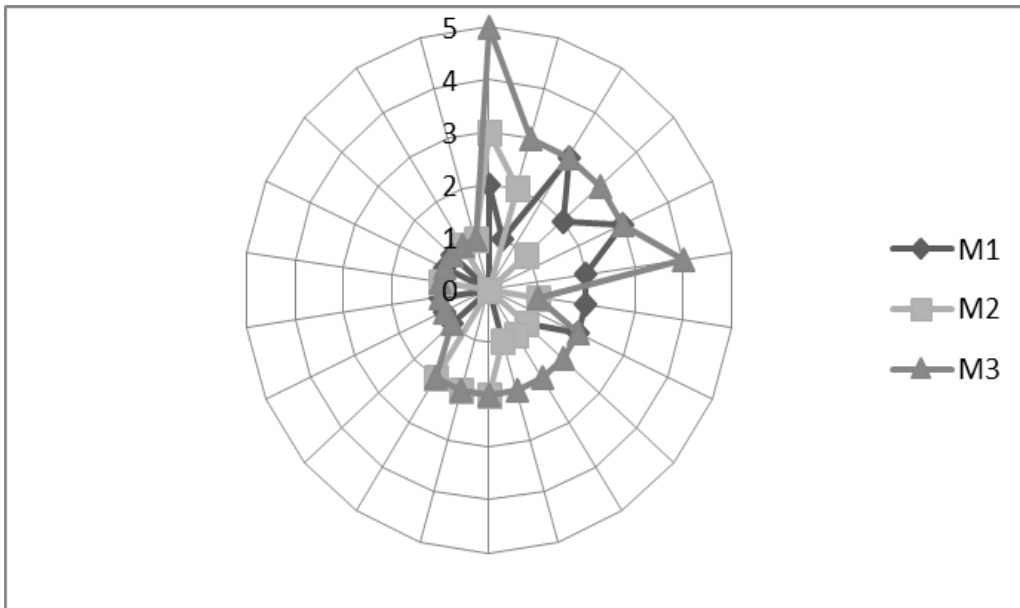


Table 1.

Hierarchical level of reflection, Bain et al (2002)

First level	Reporting R1 describes a situation, incident or issue.	“Already in the room I proceeded to prepare the drug and inject the 4mg of ondansetron into the serum, place the three-way tap in the open direction and remove the cap cleaning it with an alcohol pad...I connected the serum set to the line and opened the serum set to start the flow downwards (P22:M1R1).
Second level	Responding R2 records the emotional or personal response to the experience.	“During the simulation, I felt very insecure, jittery, pressure from my surroundings and myself” (P29:M1R2).
Third level	Relating R3 reports on understanding of the situation/issue and how it relates to theory exposes taking personal and theoretical experience as reference.	“...even though the amount of insulin surprised me a lot as they were 10 units I had to inject, I later realized that it was a patient who was going to eat, so it was difficult for hypoglycaemia to occur”(P28:M1R3).
Fourth level	Reasoning R4 interrogates, explores or explains.	“The assessment of the patient was not correct either, because at one point he told me that he was in pain and I was so overwhelmed...Also, I could have made a more detailed and systematic visual assessment”(P30:M2 R4).
Fifth level	Reconstructing R5 draws a conclusion and develops a future course of action based on reasoning.	“...and I have found out what improvements I could include to improve my performance in similar situations from now on...” (P10:M3R5).

Table 2.

Frequencies and percentages by 5Rs Reflective Writing Scale levels of reflection.

	Reporting R1	Responding R2	Relating R3	Reasoning R4	Reconstructing R5	
M1	157 (75%)	104 (57%)	83 (42%)	74 (57%)	26 (24.5%)	
M2	28 (13%)	28 (15%)	56 (29%)	33 (25%)	7 (6.5%)	
M3	25 (12%)	51 (28%)	56 (29%)	24 (18%)	73 (69%)	
Σ	210(100%)	183(100%)	195(100%)	131(100%)	106(100%)	825