

Task shifting of intravitreal injections from physicians to nurses: a qualitative study

Stine Bolme (✉ stinebolme82@gmail.com)

Norwegian University of Science and Technology, NTNU

Dordi Austeng

Norwegian University of Science and Technology, NTNU

Kari Hanne Gjeilo

St. Olavs hospital, Trondheim University Hospital

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Abstract

Background: Intravitreal injections of anti-vascular endothelial growth factor are a high-volume procedure and represent a considerable workload on ophthalmology departments. Several departments have tried to meet this increase by shifting the task to nurses. To maintain high quality patient care, we developed a training program for nurses certifying them to administer injections. This qualitative study aimed to evaluate if the nurses were confident and in control after participating in the training program, and if they were satisfied with the training and the new task.

Methods: During 2014-2018, twelve registered nurses were trained in a tertiary hospital in Central Norway. All nurses were interviewed individually (n=7) or in a group (n=5). We analyzed the interviews using Graneheim and Lundmans qualitative content analysis.

Results: Twelve sub-themes clustered in four main themes 1) responsibility and safety, 2) motivation and respect, 3) collaboration and 4) reflection and evaluation. The nurses felt confident and in control when administering injections, but experienced moments of insecurity. The new task gave the nurses a sense of achievement and they highlighted improvement of patient's lives as positive. A greater level of responsibility gave the nurses pride in their profession. They had suggestions that could improve training efficiency but were overall satisfied with the training program.

Conclusion: Our study showed that the nurses were satisfied with the training and that learning a new task led to higher self-esteem and gained respect. Suggestions to improve the training were identified, which should be considered before implemented at other departments.

Introduction

Intravitreal injections (IVI) with anti-vascular endothelial growth factor (anti-VEGF) are an efficient treatment for several retinal diseases [1] and the use of anti-VEGF has had an exponential growth over the last two decades [2]. The treatment has not only had a major impact on eye health; it has also changed the division of labor in the ophthalmology departments, as many have shifted the task over to nurses [3]. The basis for this is that a vertically staged task shift, with tasks transferred from a higher level of competence to a lower one, is a way to better utilize resources [4, 5]. In 2019, with the first randomized controlled study, we were able to show that nurse-administered injections are just as safe and have the same good effect as injections given by physicians [6]. Based on these results, we established a nurse-driven injection clinic at the University Hospital in Trondheim, Norway.

A successful nurse driven injection clinic relies on satisfied nurses, as increased well-being rises the quality of the work [7] and leads to satisfied patients [8–10]. Job satisfaction among nurses is a recurring theme in the literature [11–13], but studies of nurses' satisfaction concerning task shifting and training are scarce. To identify the training needs of nurses certified to administer IVIs, we conducted a qualitative study to explore their thoughts and optimize the training program and the new task.

Material And Methods

Design and sample

This qualitative study had an inductive descriptive design, with semi-structured interviews, individually and in group. The study took place at a tertiary hospital covering about 750 000 inhabitants in Central Norway. We developed a training program at our ophthalmology department to certify nurses to administer IVIs independently. The final version of the training program lasts ten days and comprises workshops, wet lab, and observation before performing the injections (Fig. 1).

From April through August 2016, seven out of a total of twelve nurses were interviewed individually. In March 2019, the last five nurses were interviewed in a focus group interview. The interviews lasted between 14 and 50 minutes.

Data collection and analysis

The interviewer was the first author (SB), a PhD student and resident at the Department of Ophthalmology. A semi-structured interview guide was developed, but the nurses were encouraged to elaborate on what was requested. The first author was the moderator and the last author (KHG) was an observer. The interviews were taped using a voice recorder, and transcribed verbatim by the first author.

Both the individual interviews and the focus group interview were analyzed using qualitative content analysis with an inductive approach according to Graneheim & Lundman [14].

The first author read all the raw data several times to gain an overview. Then, the process was: (1) the first step of coding was finding units of meaning; (2) the units of meaning were then condensed into fewer words; (3) the condensed units of meaning were clustered in preliminary code groups; (4) related codes were ordered into broader, higher ordered sub-themes and (5) lastly, sub-themes with similar meaning were grouped together at the highest level, called themes which the first and last author discussed and agreed on. The consistency of major themes was ensured by comparing data from the individual interviews and focus group interview.

The second author (DA), a consultant ophthalmologist, contributed by confirming the final analysis and discussing which parts of the interviews to be highlighted. The analyzing process was performed with two different analyzing tools. First in 2019, the analysis was done with paper and marker pen. Then again, a year later, with the help of the data program NVivo 12, a Computer-assisted qualitative data analysis software (QRS International). During the process there was a continuous discussion between the first and last author which brought valuable perspectives being an experienced qualitative researcher. The amount of data was considered saturated as the interviews had sufficient information power [15].

Results

The twelve participants represented both sexes. They had a widespread age and educational level, both at bachelor's and master's level. The nurses' experience from clinical practice in ophthalmology ranged from two to thirty-one years, with a mean of 10 years.

Twelve sub-themes clustered in four main themes emerged from the data: 1) responsibility and safety, 2) motivation and respect, 3) collaboration and 4) reflection and evaluation. The themes and the twelve subthemes are illustrated with quotations in the text and shown in table 1. [See Additional file 1].

Theme 1: Responsibility and safety

The nurses stated they felt safe at different stages in their training, and the ones with the most experience soon saw the injections as a routine instead of a challenge. Regardless of previous experience, all the nurses had moments of insecurity.

Routine versus variation

Most of the nurses expressed that learning a new task gave them increased variety.

You get a larger repertoire and the work gets more varied.

Several of the nurses said that the new task quickly became a routine. One nurse had hoped for a greater challenge and was disappointed.

Every patient can be a challenge in themselves, but I will not claim to have large challenges in the injection room. It's more of a routine.

Confidence and safety

All the nurses expressed they felt safe administering injections after they had gained some experience. They also appreciated that the training was voluntary and that they could spend the time they needed as one nurse explained:

An important factor was that we were told that we would not be forced through the training, but we could try if it suited us, and then withdraw if it didn't. Therefore, I felt safe the whole way.

Feeling insecure

To assess if patients had an eyelid infection was mentioned as a common source of insecurity. It was especially challenging if the patient came directly from a physician examination saying eyelid infection was not present, while the nurse was convinced of the opposite.

A patient came from examination and the journal note written by the physician said that there were traces of blepharitis, but that it was okay to inject. This leaves us nurses a bit...(insecure) if it is blepharitis we should not inject, and this is what we have been trained to think. And at the end it is us who injects the needle into the eye. Off course it is the physician's responsibility because he says in the note that the injection was approved, but we end up having a bad feeling when we believe it is blepharitis...

Administering injections also brings greater responsibility, and the risk of doing something wrong can lead to insecurity. Several nurses mentioned patients not cooperating for various reasons as challenging. One nurse expressed feeling insecure when having to take responsibility for a patient that could not fully cooperate:

Yesterday we had a patient who claimed she never had received an injection in her left eye and today would be her first time...and this was kind of injection number twenty-four in that eye...they (the patients) are growing old, some are a bit forgetful.

Another nurse explained the danger of doing a patient harm:

Off course I am happy when the patients get to keep their vision, but...it is no fun if you end up puncturing the whole eye, causing a retinal detachment, all because the patient could not lie still.

Theme 2: Motivation and respect

Traditionally administering IVs is a physician task. Mastering this task gave the nurses a sense of pride and a feeling of contributing to solve some of the department's resource challenges. The nurses also valued to be more involved in the treatment of patients.

Capability

All the nurses appreciated learning a new task and highlighted that it added pride because few nurses are trained to do IVs. One nurse emphasized that was is a privilege being certified to give injections:

I get to be a part of something unique and special.

Another nurse accentuated that learning a new procedure gave higher self-esteem:

I feel that my skills have expanded. Learned a new procedure and mastered a new situation.

Increased respect

All the twelve nurses agreed that the new task gave them increased respect among both patients and colleagues. The expanded repertoire of tasks also increased the responsibility which most of the nurses felt sharpened them and made them better nurses. One nurse explained that she had to take better care of herself to be at her best:

When I'm in the injection room, I'm more aware of my blood sugar. In the outpatient clinic we measure visual acuity and eye pressure and I can feel my belly rumbling, but it's okay, we keep going. But if I'm in the injection room, I'm more aware of that it affects me negative and that I have to eat something before I continue.

Another nurse said that nurses taking over new tasks and increased responsibility is the future:

You feel the responsibility, but it's a good kind of responsibility. This is the direction the world goes, we (the nurses) must do more and more "physician tasks". It's like this everywhere, with everything. It is a good development because we become more skilled professionally.

To make a difference

Several of the nurses expressed they accomplished something good by contributing to raise patient's quality of life and saving the department resources came as a bonus. One nurse explained why she felt more important when she was certified to give injections:

I feel I do a better job when I am in the injection clinic, than when I am doing other tasks. I feel like I make a difference when I administer injections.

Another nurse highlighted the importance of helping patients to a better quality of life:

I think it is exciting when I hear... (good news about the patient's vision), because some patients actually get better visual acuity, and I think this is great...or at least they keep their visual acuity. It is fantastic to hear that they have better vision, or that they stopped seeing skewed lines. I think this is very rewarding.

A desire to learn more

More than one nurse mentioned that it would have been satisfying learning more, both theory of ophthalmic diseases and diagnostics. Two reasons recurred when the nurses explained why they wanted to learn more; to satisfy own curiosity and to be able to answer questions from patients:

It's really as easy as learning to handle the slit lamp properly. Understand what it is you see. It's easier to explain it to the patient when you have seen it yourself. They ask a lot. How does it look? Why is it like that?

The patients often asked about their diagnosis and prognosis. Not being able to answer, but referring to a physician that could, took away some of that pride the nurses felt drifting the clinic.

It's a bit discouraging when the patient's ask a lot of questions that I cannot answer, all I can say is that they should ask again in three months at your next appointment with the physician.

Theme 3: Collaboration

The nurses agreed that collaborating with different health care personnel could be both rewarding and demanding, as could cooperating with fellow nurses as a team. A stable nurse team would provide safety for patients who do not have to meet a new physician at every appointment.

Teamwork

Some days were busier than others, with over thirty patients receiving treatment the same day. On days like these, several of the nurses talked about the importance of working with the people that they had good chemistry with. Working as a team gave them the opportunity to seek support if something went wrong. One nurse explained what she would do if she ran into problems:

We are very good talking things through, we nurses. If some things are difficult, I discuss it with my colleagues.

In the injection clinic they cooperate with fellow nurses, physicians, secretaries, and ophthalmologist referring patients to the clinic. Communication between those involved was not always easy and represented a new form of cooperation, in which the nurses had no former experience.

Taking over a physician task

All participants agreed that the new task gave the nurse's job satisfaction and better self-esteem. Because of the group dynamic, the confidence was especially highlighted in the focus group interview where they all agreed that their skills were as good as the physicians when it came to inject anti-VEGF intravitreally. One nurse stated short and concise:

The point is that we (the nurses) do it better than the physicians.

Another nurse added with a smile:

The physicians feel their role is more serious, they don't go along with the joke and the good vibe in the room. Us nurses we can have fun with the patient, but for the physicians it's just a serious procedure.

Theme 4: Reflection and evaluation

All nurses had reflections on how to improve the training program and the injection clinic in general. Evaluation of the training program resulted in shorter and more intensive training.

The training program

The nurses were overall satisfied with the training program. Some wished for continuous learning in the workplace with frequent lectures on ophthalmic diseases, training in filling out the outpatient clinic form and regular controls of the injection technique. One nurse stated:

I would love to get a refresher along the way, I think that would be useful. Some theoretical repetition of blepharitis, for instance, and the rules when the patients need to postpone their injections. But the injections itself I think I have had plenty of training in.

Most nurses preferred another nurse as a supervisor instead of a physician.

I believe it's much better when a nurse is the one giving instructions, I feel they think more about everything. What does the nurse in training need to know, observe, and try, and what progression should the nurse have?

New challenges

All the nurses had opinions on what would make the day run smoothly. Journals with missing information and too many patients at the injection list could cause stress. When they had to clarify questions with a physician, this was time-consuming as explained by one nurse:

The physician will talk to the patient and time flies, and I have already prepared the patient and I am standing there waiting with the syringe in my hand. Several times I think that I must give the patient anesthetic eyedrops all over again.

Suggestions for improvement

Several suggestions on how to improve the injection clinic came up during the interviews. Giving a physician responsibility for answering questions was something all the nurses wanted. Some wanted more time per patient, but another nurse preferred the opposite, shorter time between patients. One nurse who wished for more time said:

I want to talk more with the patients.

Discussion

Our study showed that the nurses trained to administer IVs overall were satisfied with the training and that learning a new task led to higher self-esteem and gained respect. The nurses felt confident and in control when administering injections although, they experienced moments of insecurity. They had several suggestions on how to improve the training.

The training program was still under development while the first nurses were trained, and they could decide the progression of the training themselves. It became clear that, a vertical task shift required changes in role identity, changing the mindset [16]. As the first group of nurses embraced the new task, the nurses to follow probably adopted the new role identity and the new way of thinking, making training less time consuming.

Good collaboration with colleagues is important because it makes the workday easier. Traditionally physicians and nurses handle new challenges differently. While medical education highlights independency, responsibility, and confidence to rely on oneself, nurse education is more focused on care, communication and cooperation [17]. If something proved difficult, the nurses handled this by discussing the problem with a fellow nurse. This team-oriented culture can encourage the nurses to take on untraditional responsibilities and increase the chances of a successful task shift [16]. The nurses experienced they had to rely on teamwork to a greater extent in the injection room, which led to a new way of cooperating with fellow nurses, in contrast to the more traditional physician – nurse team.

The nurses mentioned several factors that motivated them to complete the training: more varied workweek and making a difference in patients' lives. These factors are previously reported to influence the motivation to learn [18–20]. Another motivator was the pride and respect the nurses felt mastering a new task. To take responsibility for running the injection clinic may have given a desire to learn more about ophthalmic diseases. To disappoint patients asking questions and refer them to a physician for answers, may have taken away some of that pride. A study concluded that patients were less satisfied with the information provided by nurses about disease and prognosis [21].

The nurses mentioned eyelid infections as a source of insecurity and a common reason to turn to a physician for advice. Shifting tasks could lead to diffuse limits of liability [5]. Who will have the legal liability if malpractice occurs? This question is one concern considering the ethics and legislation around task shifting [22]. It may therefore be important to establish pre-defined limits of liability prior to a task shift.

The nurses in our study gained self-esteem and believed the way they administered the injections kept the patients calm and comfortable. Patient satisfaction has been recognized as an important factor for quality of care [23, 24]. Literature has showed that patients are satisfied with nurses delivering IVIs [25]. It is conceivable that task shifting the administration of the injections to nurses ensures better continuity and that this makes the patients feel more satisfied [26, 27].

The suggested alterations to the training program that emerged during the interviews, gave the department an opportunity to improve and adjust the training and the injection clinic [28]. Therefore, a specific physician was designated to answer questions from the nurses. As more nurses were trained, it became clear that ten days of intensive training was sufficient. At their own request the nurses have a re-certification once a year, to ensure the quality and adherence to the procedures.

Methodological considerations

This study included both individual interviews and a group interview. The safety and confidentiality of an individual interview differs from the group dynamics in a focus group interview where a common agreement will be highlighted [29, 30]. We experienced that the group dynamics brought broader perspectives and new aspects of the training and the new task. The combination of interview methods strengthened the study, as did the combination of different analyzing tools. A third study strength was that all the twelve nurses trained in administering IVI were interviewed.

Conducting interviews came from a desire to learn from the trained nurses because an interview can give in-depth information in participants' attitudes, thoughts, and actions [31]. This qualitative study is an important supplement to our previous RCT [6]. This mixing of methods can act complementary and give a richer and deeper understanding of the task shift concept [32] and it is in line with recommendations for training needs assessment [28].

Recruiting only highly motivated nurses that volunteered, may have introduced a selection bias in that the most motivated nurses learns faster and may evaluate the training program in a more positive way [33]. However, dedicated, and motivated nurses were most likely a criterion for success.

The first author had limited experience with the interview technique, and being inexperienced can make it more challenging to avoid one's own experience from influencing the interpretations. [29]. However, the last author monitored the focus group interview and worked closely with the first author interpreting the transcripts. Working at the department, the participants might have had a personal interest in the injection clinic becoming a success, this could have biased the feedback. On the other hand, the nurses seemed very communicative and gave both positive and negative feedback.

Conclusion

The nurses certified to inject anti-VEGF intravitreally expressed satisfaction with the training and the new task. Suggestions to improve the training were identified, which should be considered before implemented at other departments.

Abbreviations

Anti-VEGF = anti-vascular endothelial growth factor

DA = Dordi Austeng, second author

IVI = intravitreal injections

KHG = Kari Hanne Gjeilo, last author

SB = Stine Bolme, first author

RCT = randomized controlled trial

Declarations

Ethics approval and consent to participate

The study followed the declaration of Helsinki [34] and was approved by the Regional Committee for Medical and Health Research Ethics, South-Eastern Norway (2014/1719). Written informed consent was obtained from the nurses. To ensure confidentiality, participants are not described in detail, and the quotes are not linked to the individual participant.

Consent for publication

Not applicable

Availability of data

The dataset analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare no financial and non-financial competing interests.

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Authors' contributions

Conception and design: SB, DA, KHG. Analysis and interpretation: SB, DA, KHG. Data collection: SB, KHG. Overall responsibility: SB, DA, KHG.

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Tables

Due to technical limitations, Table 1 is only available as a download in the supplementary files section.

Figures

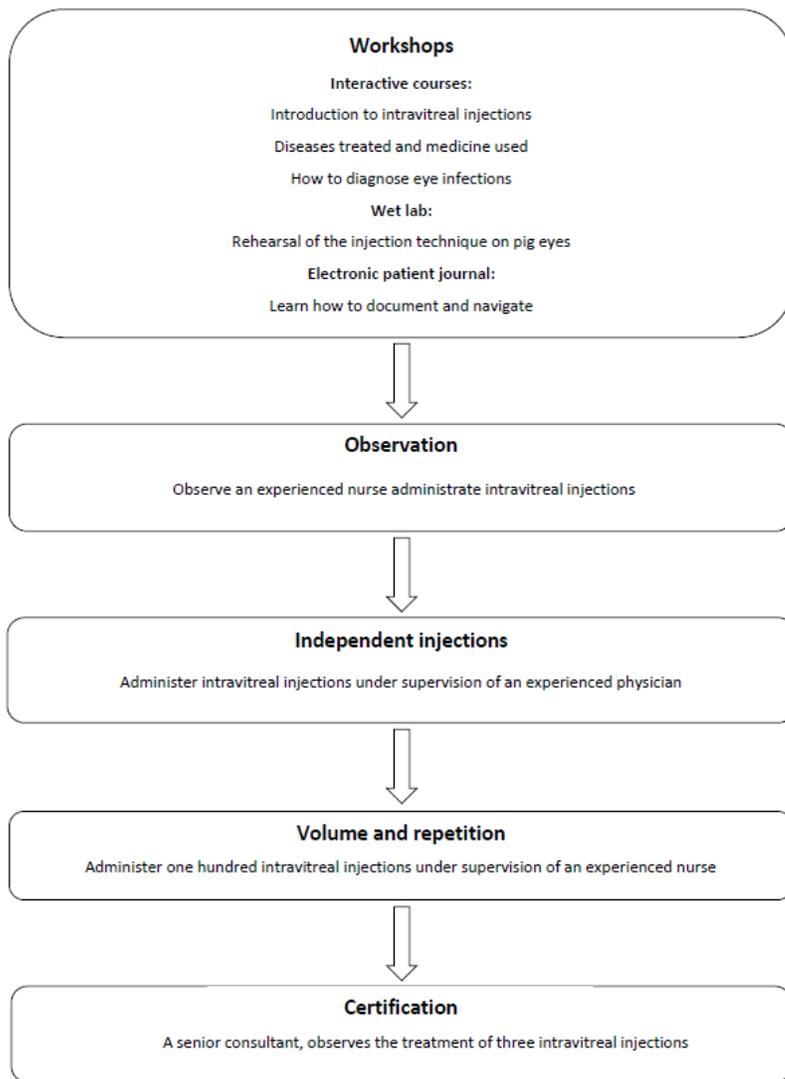


Figure 1

Training program for nurses. Legend: The final version of the ten-day training program

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Table1.xlsx](#)