



DESIGN4 HEALTH

**Extract of the
Proceedings of the 5th International
Conference on Design4Health
Sheffield 4th – 6th September 2018**

Editors: Kirsty Christer, Claire Craig & Dan Wolstenholme

ISBN: 978-1-84387-421-8

708. Exploring posters as a probing tool to engage nurses in a development process

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ABSTRACT *In this paper, we explore the characteristics of posters as an efficient and effective probing tool for hospital nurse participation in the development of processes, services or products. The main challenge in this respect is the limited time and attention available to nurses during their work shifts. For this, we analysed the design and effectiveness of posters from earlier projects and used existing knowledge on probing for preliminary guidelines focused on design elements, context of placement, and fit with work process. We then designed a poster for gathering insights during nurses' work shifts into their administrative tasks and perceived relevance. To evaluate, this table poster design was consecutively placed on three nursing units in a Dutch hospital. Activities of nurses with the poster and necessary interventions were analysed and used for further insights into the characteristics of effective posters for this specific target group. The research raised new questions about how best to elicit nurses' participation during work shifts.*

Keywords: nurse, design probe, participatory design

Introduction

The 'Design for Nurses' research project focuses on involving the specific target group of hospital nurses in product and service development and procurement. We search and test which generative methods and tools (Sanders, Brandt, and Binder 2010) are efficient and effective both for nurses and for design researchers. Designers have a restricted amount of billable hours for projects, and during work shifts, nurses are fully focused on providing care (Sanders and Stappers 2012). This makes it difficult for nurses to step out of ongoing operational activities, for example for an hour-long workshop (Ostergaard, Karasti, and Simonsen 2016), in order to reflect on their experiences or to ideate. The challenge, therefore, is how to involve both nurses and designers in the design process in a way that is compatible with their working patterns.

The design of such a tool needs to be informed by its purpose and context (Sanders, Brandt, and Binder 2010). The paradox is that in order to design an effective and efficient tool for nurses that help gain insight on their workflow, we must already have (and be able to apply) knowledge of the nurses and their workflows. This conundrum necessitates an exploratory study, in which we not only design a tool to elicit insights and knowledge on the subject, but also to explore the effectiveness of the means of gathering the insights. In this paper we focus on posters as a participatory research tool for nursing units.

Method

This explorative study consisted of two parts. First, we analysed posters used in four earlier projects involving nurses at a Dutch academic hospital between October 2015 and November 2016, to uncover variables in design that influence the effectiveness of a poster. We used the remarks made on the posters, pictures of the used posters in their context, email of project manager and students, and journal notes made during that period for retrospective analysis.

The found variables were combined with literature and with practical knowledge of design probes and used as preliminary guidelines for the design and use of a poster for an ongoing project. The poster was placed in three nursing units successively, with time to make changes between applications based on initial results and feedback. During the period of placement, visits were made regularly to capture the progress by taking pictures of the poster in its context. Interventions intended to enhance the use of the poster were made by the researcher, nurse manager, or the nurses themselves. Interaction with nurses or others during visits was recorded in a research journal on a tablet. The entries were noted in a spreadsheet, with the dates of the pictures taken. This gave an impression of the rate of adoption of the poster.

The effectiveness of the posters is assessed by the 'momentum' of their input (i.e. the speed with which the nurses engaged and the extent to which they required prompting), the quality and quantity of their input, the observed actions, and also by the nurses' remarks on the use of the poster. The quality of the feedback was assessed subjectively, by the researcher.

Results

Retrospective analysis of posters

Four different poster designs in four different projects were analysed. These are shown in Figure 1 to 4.

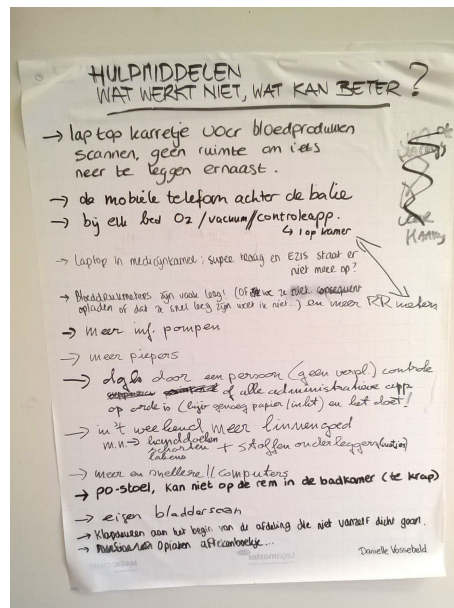


Figure 1: flipchart sheet (poster a) with short handwritten instructions for feedback on devices in general

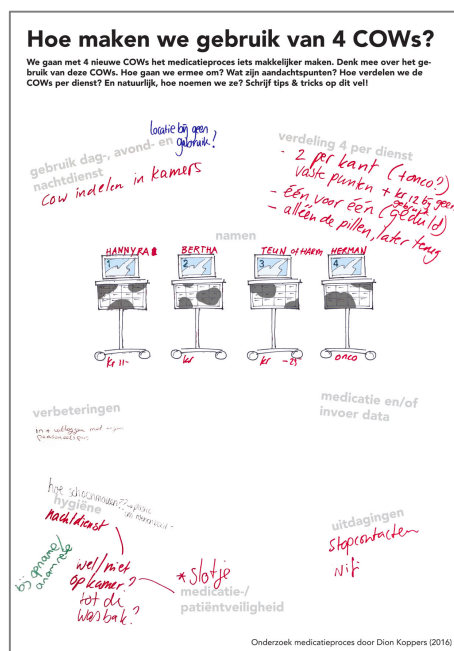


Figure 2: poster (b) on the effect of introducing four Computers on Wheels on a unit

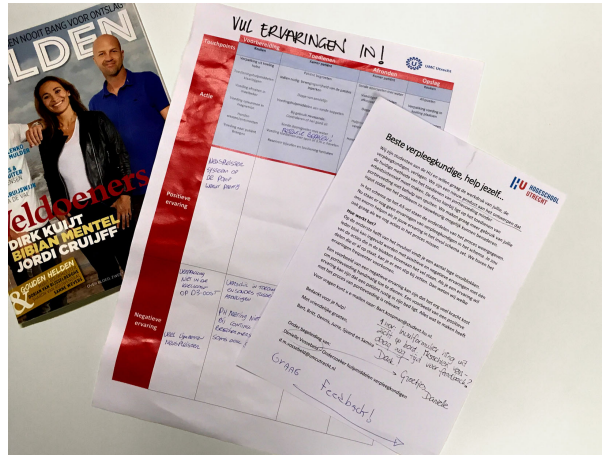


Figure 3: one of three copies of poster (c) on tube feeding on table



Figure 4: poster (d) on a possible layout of the nursing unit

Based on the analysis combined with existing insights of design probes (Gaver, Dunne, and Pacenti 1999; Mattelmäki 2006; Mattelmäki 2008; Sanders and Stappers 2012; Sanders and Stappers 2014), we tentatively identified groups of characteristics that can make posters effective participative research tools for nurses:

Design elements

The poster must be **inviting** and clearly **designed to be used**, with **enough space for writing**. High-quality materials and designs can be daunting to scribble on. **Use cues** and words as practical hints (Mattelmäki 2006) trigger input. Poster (b) shows clustering around the pre-printed subjects. A **first entry** by the researcher can lower the threshold for the nurses to contribute (Sanders and Stappers 2012). The flipchart sheet (a) was empty with handwritten instructions and thin lines which indicate use. It was fully filled after one week. The floorplan (d) looked more complex and already full. It attracted just one remark after two weeks.

Context of placement

The poster's physical location must be **in sight** ('in your face'-design) and **easily accessible** for writing. All posters were hung in the break room of nursing units, as this place is **most likely to be visited** during the shift. This room has couches, chairs and table(s), and is used by nurses for breaks, team meetings and instructions.

Posters (a and b) on the wall received relevant input. Two posters (c) remained empty after one week when placed on the whiteboard between other announcements. After placing them on the table, along with a personal oral and handwritten request by the researcher, the posters received input the same day.

Fit with work process

The poster should **not disrupt the work process**, **short and clear instructions** are necessary. Nurses' focus is on patient care, and they have little time for activities outside the primary process. Lengthy explanations as in posters (c and d) seemed to have a negative effect on use. The floorplan might also have been difficult and time-consuming to interpret. The **duration of placement** was for at least one week, so nurses from different shifts can participate.

Fit with the target group's characteristics

The poster should **match the characteristics of the nurses**, including their engagement with or level of knowledge on the subject. The general question of the flipchart sheet (a) could be interpreted on many levels and resulted in a wide variety of feedback which was not all relevant to the specified goal, but could be used for improvement of the unit.

Motivation

The poster should encourage a **sense of ownership** among the nursing unit, influenced by their perception of having an influence on the subject. This can be enhanced by the nurse manager, researcher, and/or peers **stimulating** the research. Personal contact with nurses resulted twice in valuable interaction. Poster (b) triggered a brainstorm among the available nurses when it was hung during the nurses' coffee break. The retrieval of one of poster (c) resulted in a conversation on the subject with a nurse on his break, leading to extra relevant insights. The announcement of the floorplan (d) in the 'weekmail' did not have any effect.

New poster design

We used an ongoing project on the administrative burden to design and test a poster based on the found characteristics. We gathered information on nurses' perceptions of the varieties and challenges of the administration and registration tasks they face (Michel et al. 2017; VvAA 2017).

The poster is based on day-in-a-life worksheets (Sanders and Stappers 2012) and consisted of a 24-hour clock (see Figure 5). The clock is divided into the three shifts, as a guide for specific tasks. Two specific moments in the nursing process which generate administration – the anamnesis (nursing assessment of a patient at hospital admission) and patient discharge – were placed as extra timelines on the poster. These timelines remained empty at unit one and this part was even folded back on day five. As the primary focus of the research was on the administrative tasks clock, we kept it like that, also with the other units.



Figure 5: poster design of nursing unit one

We initially devised the process to consist of three stages of one week which were designed to generate in-depth insights on tasks. The nurses were supposed to (1) list all administrative tasks, (2) assess the perceived relevance using red and yellow coloured sticker dots, and (3) indicate means and difficulty of the tasks. At unit two and three we combined the first two assignments in a one week assignment only. This merging resulted in needing a green dot to identify administrative tasks that were considered relevant, so we added this on the poster of unit three.

Context of placement

The posters were placed consecutively on the tables in the break rooms of the three units. The most distinctive feature of this poster design is the placement on the dinner table in the break room, like a large placemat. The rationale for this was that it is easier to write on a poster on a table than on a wall. Moreover, it was always in sight and 'at hand' for the nurses sitting at the table. The presupposition was that this table poster would ultimately gather more input than a poster on a wall.

On unit two, a nurse from the night shift had taken it to the nursing station. That night 19 entries were added (see Figure 6). At the end of day three, the poster was hung on the notice board and after that received three entries. On unit three a nurse immediately taped it to the table.

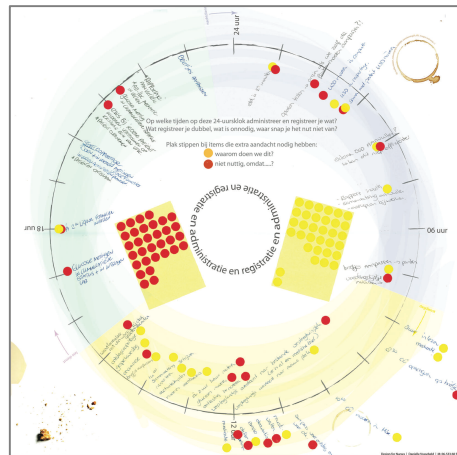


Figure 6: completed poster of unit two

Design elements

Coffee stains and cookie crumbs were printed on the poster as a 'use cue' that stains were 'allowed'. This idea backfired. On unit one a nurse assistant removed the poster to keep it clean because the first stain was already on it. We added a handwritten comment near the stain and printed a comment around the stain for the next two versions.

The poster was designed in accordance with the pre-identified characteristics of minimal text, enough space for writing, and clear intention of use. For unit one we had a short instruction on a separate sheet of paper. For unit two and three we wrote the assignment on the poster. The paper was plain, thick quality. Nurses could write on them with their pens, which they use for their administrative tasks.

Fit with work process

By placing it for a longer period (at least a week), most of the workforce of a unit had the opportunity to interact with the poster. Nurses could interact with earlier responses provided by their colleagues from other shifts, making it a collective effort of nurses.

Motivation

The poster was announced by the nurse manager via email the week before placement and/or during the first break. To attract attention to the poster, we designed space for the placement of 'stroopwafels', a Dutch treat.

The unit secretary of unit one reported that a nurse had taken it off the table because she did not want anything to do with it during her break. The secretary called it 'research-fatigue', as nurses

already have to track so much for research purposes. Also, the placing of dots was done in a session organized by the nurse manager at the end of week two, as the poster did not receive input. Week three was therefore skipped.

At unit three most nurses mentioned that they had not read the 'weekmail' and assignment, so the researcher explained the poster. This triggered a discussion on several relevant topics, but no items were written on the poster. On day three the researcher intervened, adding one item to the empty poster and taping a small picture of unit 2's completed poster as a trigger. She asked a senior nurse to write the entries that had been mentioned on Monday (see Figure 7). After these interventions, nurses became more involved.



Figure 7: first entries poster nursing unit three

Effectiveness table poster

The poster in unit one got 45 detailed entries, including one by the researcher, evenly distributed in the first week, with a total of 52 after two weeks. The poster in unit two was filled with 43 detailed entries in the first 24 hours, with a total of 48 after one week. The poster in unit three remained empty for 48 hours and ended with 30 items, including one by the researcher and eight organizational tasks.

We also noticed that not all registration tasks were specifically mentioned. A nurse was observed answering an assistant physician three times to look for the requested information in the Electronic Medical Record (EMR) herself. It was also observed that a nurse entered the same measurements in two different fields in the EMR. Moreover, we needed additional explanation. One red dot, placed near the entry 'anamnesis', proved not to be a judgement on anamnesis in general, but on the fact that patient data was asked and registered twice during this process.

Discussion

The found characteristics of effective posters are interdependent. In our reflection on the process described above we focus mainly on how using a table poster is an effective tool for nurses.

As the poster was placed in the break room, nurses mostly interacted with it during their breaks, at which time we also had valuable interactions. We were, therefore, confronting them and engaging them in work-related issues during their moments of rest. This is questionable as work pressure is high due to the administrative burden (VvAA 2017). One nurse's solution – placing it at the nursing station during the night shift – may indicate a more appropriate location for such work-related research tools. This was impossible when it was taped to the table, which prevented it from being put aside.

Although the issue of administrative tasks entails a degree of urgency for nurses, it is also a wide-ranging and complex subject. It is however questionable whether nurses can, without hints, recall and reflect on all of the tasks during the shifts during their breaks. Triggering responses of nurses during their activities could have better results. The input is not complete, but interesting as a starting point for further inquiry. A follow-up is needed for comprehension of some results.

The idea of 'in your face'-design, by placing it on a table, was less effective in unit 3. As the break room had three couches, the table was less used. This may have had an influence on the lack of engagement with the poster. We also see a saturation in attention with units one and two. A week seems adequate for input from most nurses, and short enough to not get accustomed to and become invisible.

The distinct handwriting styles suggest that the posters were filled out by just a few nurses. It's unknown whether they did this by themselves or in cooperation with others, as in poster (b). Requesting a nurse to place a first entry as a use cue could also be more positive in a sense of ownership and as motivation. Extra personal, face-to-face encouragement and explanations of nurse managers and the researcher were needed to obtain relevant input for the project.

Conclusion

In order to explore insights regarding the working processes of nurses, table-top posters provide a promising tool. We have identified five tentative groups of characteristics of effective posters and their application in context, that could be useful for other nurse researchers to consider, apply and further develop. One thing is certain: just placing a poster on a wall in order to elicit insights is not going to be effective in a work environment where the focus is fully on operations and the research tool has to compete with many other requests for input. An active approach, with personal interactions, and moments for deepening questions and explanation by the nurses, can greatly enhance the effectiveness of posters for eliciting input on the design process.

Acknowledgements

Thanks are due to the involved students, and unit managers and nurses at UMC Utrecht. Special thanks go to Monique van Oirschot for her research on the administrative burden of nurses.

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