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Rich pictures: a companion method for qualitative research in medical education

Sayra M Cristancho¹  & Esther Helmich² 

CONTEXT Within the social sciences, researchers increasingly build on visual methods to explore complex phenomena and understand how people experience and give meaning to this complexity. Amongst the variety of visual methods available, rich pictures are beginning to gain traction in health professions education (HPE) research.

APPROACH A rich picture is a pictorial representation of a particular situation, including what happened, who was involved, how people felt, how people acted, how people behaved, and what external pressures they acted upon. Rich pictures expand our

perspective; they may highlight connections, illuminate the big picture and reveal unexpected emotions. Although new methods bring excitement to the field, it is our responsibility to also be cautious and insightful about their limitations. Rich pictures are a method in evolution in HPE research, with many unknowns about what is possible and what is optimal.

PURPOSE In the current paper, we aim to map out the background, describe the process and share some reflective insights of using rich pictures as a data collection method.

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INTRODUCTION

We may all be familiar with the saying that ‘a picture is worth a thousand words’. Indeed, within health professions education (HPE) research, scientists increasingly build on visual methods to explore complex phenomena and understand how people experience and give meaning to this complexity.¹ Visual methods may include drawings, comics, graphic novels, photographs, video or collage.^{2–9} As HPE researchers interested in the learning and development of health care professionals in complex workplaces, we have ample experience using a specific visual tool – the rich picture.¹⁰ Within our Dutch–Canadian research collaboration, we have explored complexity in hospitals, nursing homes and general practice, with medical students, postgraduate medical trainees, health care professionals and patients. In the current paper, we aim to map out the background, describe the process and share some reflections on the value, as well as challenges, of using rich pictures as a qualitative data collection method. As such, this paper is not a cookbook description of rich pictures. Rather, this paper is intended to provide HPE researchers with experiential insights that they can use to inform their decisions of using (or not) rich pictures to complement their data collection strategies.

WHAT ARE RICH PICTURES AND WHAT DO THEY LOOK LIKE?

A rich picture is a pictorial representation of a particular situation, including what happened, who was involved, how people felt, how people acted, how people behaved, and what external pressures were present. Rich pictures may be artistic diagrams or stick-figure diagrams. They are intended to show features of interest and the interactions between them according to the perspective of the drawer.

In a study about difficult conversations in the neonatology unit,¹¹ one participant depicted and described his perspective on a situation that involved a very sick baby with multiple organ failure and the conversations that took place with the parents about withdrawing life support (see Fig. 1).

According to the participant:

We [physicians] are on the left and parents on the right. The baby is symbolically on the table. Thoughts and feelings between us and the parents were very different. We are thinking about tests, imaging, medications, ventilator, organs failing, reports. Parents were thinking about child playing soccer, going home, going to the beach. Green people are future friends of the child. Parents had a lot of grief. They and we

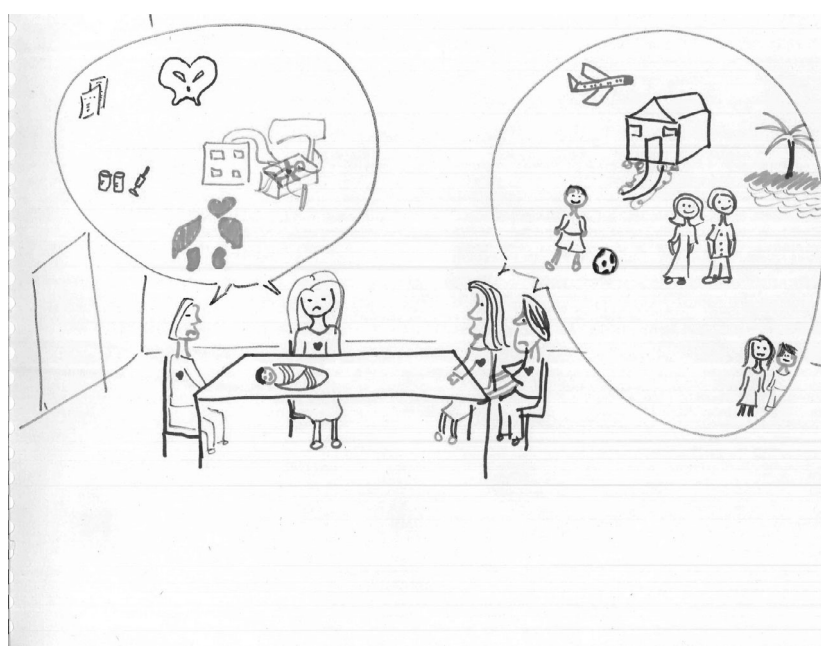


Figure 1 Example of a rich picture

didn't know why baby was so sick. I was really sad but there was no opportunity to say we're really sorry that your baby is dying. I didn't draw this but I withdrew the baby myself when baby was ready. Me [participant], RT [respiratory therapist], family were present for extubation. I gave meds to make baby more comfortable. I drew myself and the consultant in the parents' thought bubble because I didn't know how they will perceive us, what they will remember. I hope they got something from us.

Drawing this rich picture and reflecting on it during an interview allowed the participant to integrate the multiple dimensions of the situation. People, thoughts and feelings were portrayed in an interconnected fashion that brought to the surface the many issues that were at stake during the situation.

Our use of rich pictures stems from the so-called systems paradigm. Under this paradigm, complex situations are viewed as collections of interconnected parts.¹² Through this interconnecting worldview, a different process for problem solving emerges. Rather than decomposing a problem into parts and then fixing each part separately, the systems approach widens the view to focus upon the interconnections between the parts and their environment. To achieve this goal, diagramming is the key activity used in the systems approach.^{13,14} Rich pictures have been used extensively in systems engineering, the disciplinary background of one of the authors (SMC). For instance, systems engineering treats rich pictures as a tool for individuals to reflect on and share their thoughts, feelings and actions during a particular problematic situation they were involved in, either in the design or in the use of technology.^{15,16} Using rich pictures, systems engineering utilises the concept of synthesis to reason upwards from the perspective of each individual to understand their relationships within the situation or environment they are part of. Although other types of system diagrams can be used for the same purpose,^{17,18} we have opted for rich pictures because of their reported flexibility and ease of use.^{19,20} Our research takes a constructivist epistemological stance; therefore, our focus is on the use of rich pictures to stimulate perspective taking when exploring people's experiences in complex and dynamic environments. As shown in the example above, rich pictures allow individuals to step back and see the whole situation at once, and to even notice features not consciously built into the drawing. In this way, rich pictures can be used as a

vehicle for moving from a state of confusion, where all someone knows is that he or she is dealing with a problematic situation, to a state where it is possible to identify one or more issues that are at the heart of the struggle.

As a research method, rich pictures can serve multiple purposes. For research participants, standing back to see their own picture and sharing their drawing with a researcher allows for discovering things that they might otherwise have missed: connections; traps; possibilities; contradictions, and so on. This helps research participants in question their own assumptions and helps researchers see the vastly different assumptions various people might have. However, for researchers to explore and challenge assumptions, they must recognise that rich pictures have personal meaning and require interpretation. Rather than existing on their own, rich pictures are a device to aid conversation by encouraging holistic rather than reductionist thinking about a situation. In this way, rich pictures become a useful tool for researchers particularly interested in using them as part of an interview.²¹ Rich pictures can be used to share and express what might be difficult to articulate and the vantage point from which people are interpreting the situation.²² With that in mind, it is important to realise that the value of rich pictures doesn't lie in depicting everything in the situation but in gaining an understanding of what a person sees happening in the situation. The quality of the drawing is irrelevant. What is relevant is the articulation of all that is perceived as problematic or significant: emotions; thoughts and actions, as well as relationships of various sorts. Researchers should remain aware of the fact that all participants make judgements on what is important from the particular perspective they are drawing from.

Rich pictures have been used in the scientific literature to explore a variety of complex phenomena. Outside HPE research, rich pictures have been used, for instance, to understand women's experiences of postnatal depression,²³ or the ways in which people understand illnesses.²⁰ In HPE research, we have used rich pictures to explore how health care professionals and trainees adapt to the complexity of their clinical workplace,^{11,24-26} as well as to explore the role of emotions during such adaptation.²⁵ What is common across these examples is that the complexity of human affairs is always a complexity of multiple interacting relationships; pictures are an important complement to verbal accounts when expressing those relationships. In

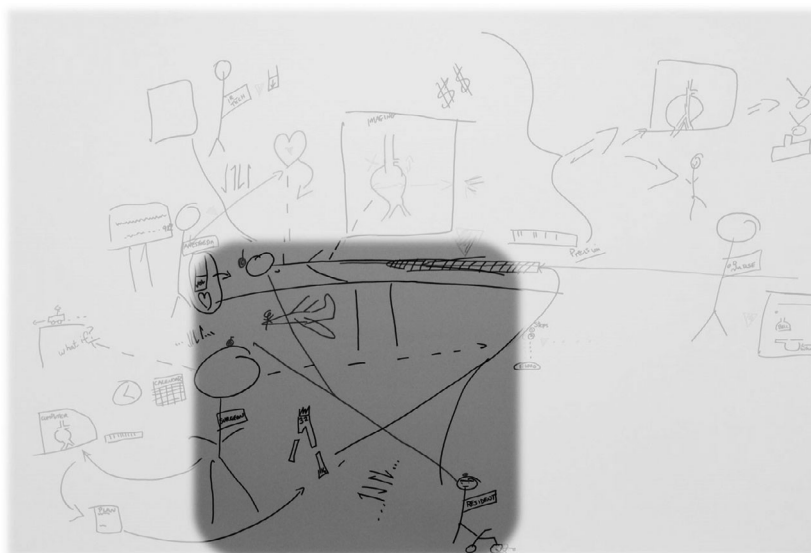


Figure 2 Example of a visual metaphor to depict complexity

particular, visual metaphors, icons or symbols have provided clinicians, trainees and patients with a powerful language to depict the real complexity of the situations they live in.¹⁰ For instance, in a study about surgical judgement during high-stakes operations, one surgeon commented that drawing the situation allowed him to realise that what made the operation challenging for him was not the procedural or technical aspect, but rather his unacknowledged lack of trust in the trainee. This realisation became clear to the participant after he drew the metaphor of William Tell (with apples in the heads of the surgeon and the patient and the trainee shooting the arrow at them; see Fig. 2).

We acknowledge that other visual methods can elicit similar insights. However, we believe rich pictures offer particular advantages. For instance, although photovoice^{27,28} uses the power of photographs to focus and bring forward the central elements of what a participant wants to talk about, it also increases the ethical concerns about anonymity, particularly when the photos include other people. Even if the option to blur faces exists, blurring faces might sometimes take away the purpose of taking the photo. The use of stick figures in rich pictures has the advantage of protecting anonymity. Other methods we are familiar with include concept mapping²⁹ and the Pictor technique.³⁰ Concept mapping illustrates relationships amongst words, concepts and facts and the Pictor technique illustrates roles and relationships using arrow-shaped adhesive notes or cards. Both are great methods for collaborative

working, where a network of individuals or concepts becomes clear. In the case of concept mapping, we believe that because the focus of the visual representation is on concepts and ideas, it can complicate the rendering of a personal story, particularly in instances where emotions need to be portrayed. The Pictor technique, similar to photovoice, has been commended for its ease of use and clear structure. However, we believe that such structure might also restrict participants from using other types of visual language such as metaphors.³¹ This is not an exhaustive list, nor a formal comparison across methods. We offer these reflections from our experience fully aware that they don't encapsulate all possibilities. Therefore, our intention is not to claim that rich pictures are a better method. Rich pictures are merely one of many visual methods with advantages but also with inherent challenges and limitations. We further illustrate them later in this paper.

WHAT DOES THE PROCESS OF USING RICH PICTURES LOOK LIKE?

In all our studies, all research procedures were approved by institutional research ethics boards. Participants were recruited using purposive sampling, in some instances complemented by snowball sampling. For instance, in one study about navigating complexity in the intensive care unit, we first purposively sampled expert clinicians to understand how they define complexity and to explore how they use their clinical judgement during a complex

clinical case. Next, we invited consenting participants to approach colleagues who could provide different perspectives about each case.³² Across different research projects our approach has been to ask participants to recall a memorable situation related to the specific research question and draw everything that they deem important. We explain to participants what a rich picture is, and show them an example of a rich picture. We share an example with them to reiterate that the content of their drawing is what's important - not their artistic abilities. In our experience, participants have usually taken 20–30 minutes to complete their drawings on a large sheet of paper and using a selection of markers we provide. The drawing activity is followed by a semi-structured interview that lasts 30–60 minutes. During the interview, we ask participants first to describe their drawing in detail, followed by probing questions from the researchers to explore additional details about the situation. For instance, we ask them to elaborate on behaviours or feelings evoked during the particular situation, as well as ideas and perceptions they have developed around the specific topic under investigation (e.g. advocacy³²).

This focus on the participant's story about the drawing, not on its aesthetic comprehensiveness, has allowed us to identify a few patterns in participants' drawings, including the following.

- 1 Rich pictures that are holistic and all encompassing, representing complexity with many elements, arrows, relationships, etc.;
- 2 Rich pictures that are chronological, temporal, and depicting a process or evolution;
- 3 Rich pictures that are metaphorical, using just one single image, and
- 4 Rich pictures that resemble photographs of a specific situation.

Here, we will present some examples of these patterns, using published papers, but in our description we will also refer to pictures from ongoing research to illustrate these patterns.^{11,24,25} Participants provided consent in each study to allow their rich pictures to be used for scientific dissemination purposes. It is important to note that the descriptions provided below are taken verbatim from participant's accounts; they do not constitute analytical codes. Analytical insights are provided in the subsequent paragraphs. The more typical rich pictures used to depict a complex situation are holistic and all encompassing. These are drawings representing complexity with many interacting elements, arrows, relationships, thought bubbles,

etc. (Appendix S1: Fig. 1). Emotions are typically being represented by smiling, worried or sad faces, specific arm gestures and body posture or size, and the use of colours and metaphor, for instance the colour red indicating conflict and dark clouds pouring with rain indicating sadness (Appendix S1: Figs 2–4). Some drawings are chronological or temporal and depict a process or evolution, such as the progression of a complex surgery that took place in the span of a day (Appendix S1: Fig. 5). In one of our more recent studies including patients with advanced cancer (not yet published), patients used the rich pictures to tell the whole story of being diagnosed with cancer, getting the first treatments, receiving bad news, and now seeing death approaching, spanning a time period of several months or even years. Participants in this specific study also drew metaphorically, using well-chosen images to express what it meant to them to live with cancer and approaching death. We also found that, in some cases, the metaphor encompassed most of the rich picture, and that sometimes even the whole drawing consisted of just one single image (Appendix S1: Fig. 6). Finally, in two ongoing studies exploring emotions in end-of-life care, participants drew rich pictures that resembled a photograph of the specific situation. This kind of rich picture tends to include many details that may seem irrelevant (family photos, flowers on a table), but that were drawn on purpose. Participants have commented that photo-like rich pictures helped them convey the emotional character of the situation, in which every detail is to be remembered.

During data analysis, it is important to realise that interpretation will start as part of the data collection. The drawing exercise will often be followed by the researcher asking what the interviewee drew and why, exploring all the different elements in the drawing, their relationships, game changers and emerging insights. The interview thus is a conversation in which co-construction takes place between the participant and the researcher: people draw; the researcher starts asking questions; participants may continue drawing during the interview, and this all contributes to the crafting of the story. Because our use of rich pictures is rooted in systems thinking, we have used the following questions as prompts to keep us focused on what is colloquially known as 'the big picture'.

- 1 What does the situation look like? What are the different elements (e.g. people, artefacts, relations and system factors)? How are those elements interconnected?

- 2 How did the situation evolve? How were other people's perspectives on the situation depicted? How do those different perspectives interact?
- 3 What is the influence of drawing on the subsequent conversation and how does this impact participants' ability to respond to complex situations?

As these questions only act as prompts to remain attuned to the story, they are not situated within any particular methodology.

Depending on the research question, the analysis may focus on the content of the interviews or on the combined 'rich picture and interview' data. For the former, the rich picture elicits the interview content and provides the visual material to illustrate analytical interpretations in the final research report. No aesthetic analysis is conducted. For the latter, the rich picture is aesthetically analysed by itself and along with an analysis of the interview content. We have predominantly used constructivist grounded theory (CGT) as our methodological lens because of the social processes that characterise complex human phenomena. An added benefit of using CGT in relation to rich pictures relates to CGT's common use of diagramming as an analytical tool to show relationships between themes.^{33,34} In this way, we have been able to incorporate systems thinking principles into both data collection and data analysis. Although CGT has been our methodological choice, it doesn't exclude rich pictures from being used as part of other approaches such as phenomenology or thematic analysis, amongst others.

When analysing combined 'rich picture and interview' data, we suggest combining iconographic analysis with the standard CGT analytical principles. Our iconographic analysis is informed by arts criticism²¹ and consists of two steps: (i) rich picture viewing sessions, and (ii) gallery walks. To illustrate, during our rich picture viewing sessions, we focus on one single picture in as much detail as possible, to ensure we describe the picture before attempting interpretation. Our goal during this step is to develop the visual sensitivity of the research team, as all participants in the session will have different ways of seeing and different lenses to look through. We usually aim to identify factors influencing the evolution of the situation (e.g. social, organisational and personal) and indicators of complexity (e.g. arrows, question marks, timetables, facial expression, body language, specific icons and metaphors). Once we have identified and discussed

all the different elements in the drawing and the possible relationships between them, we bring in the interview content to help us reconstruct and interpret the story from the participant's perspective. In our experience, these rich picture viewing sessions are useful to the research team when they are engaging in analytical steps such as coding and constant comparison. Gallery walks can be used to inform early coding stages or to incorporate the principle of triangulation as theoretical interpretations are developed. During gallery walks, a set of selected drawings are hung on the walls of a big room. The aim of a gallery walk is to gather different stakeholders to discuss patterns, structures, differences and similarities across rich pictures. Stakeholders may include educationalists, practitioners, researchers and research participants, each bringing a different perspective. Their task is to engage in conversation about what they see in the rich pictures. As such, a gallery walk might reveal unexpected insights that may serve as specific lenses for further analyses. For instance, someone might ask something that the interviewer hadn't thought about and that might require a second reading or coding of the interviews, or someone might come up with an interesting question to explore in future interviews. Throughout this process, iteration and constant comparison have been at the centre of our analytical approach, keeping in line with CGT principles as our methodology of choice.^{33,34} Other methodologies will require compliance with different principles, which researchers must remain attuned to. Regardless of the methodological choices, reflexivity is paramount to guide analytical decisions and data interpretation.

WHAT ARE THE OPPORTUNITIES AND CHALLENGES THAT RICH PICTURES BRING TO HPE RESEARCH?

Across our studies, rich pictures offered participants an alternative way to represent and communicate ideas and experiences. Drawing requires participants to slow down and reflect on the story they would like to share. Through this reflection participants reported being able to *see* their issues or experiences from a more holistic vantage point. Furthermore, after spending private time drawing (~30 minutes), they found it easier to describe their experiences in detail to the researchers. This is particularly important when exploring topics that are difficult to verbalise, either because they are emotionally charged or because they are too abstract in the participants' minds. In both circumstances, visual

metaphors were extensively used to facilitate the sharing of thoughts and experiences.

The polysemic nature of images, however, also carries challenges when using rich pictures for research purposes.^{35,36} Asking participants to draw can result in rich pictures that portray sensitive experiences or in the realisation by the participant that they were revealing more than what they were expecting to share. In those instances, researchers should be prepared to tactfully manage those conversations and should be expected to listen empathetically and refer the participant to the appropriate support mechanism. Researchers should also be attuned to the fact that negative emotions are part of the human experience. Qualitative research generally – and with visuals especially – may elicit these emotions. Our ethical obligation as researchers is to give participants space to express their emotions, remind them that they may stop or take breaks, and provide them with appropriate resources. Negative emotions cannot – and should not – always be avoided. For example, in one study about complex cases a participant was deeply emotional when drawing their experience. At the end of the interview, the participant appreciated the time to process their experience and found the process cathartic. Once this conversation ended, the researcher referred the participant to the patient experience office to receive appropriate psychological support. These measures were developed in collaboration with our ethics board.

Our preferred approach in using rich pictures has been to combine them with interviews. In other words, mostly as a data elicitation method. The interviews serve as gatekeepers to focus the interpretation of the rich picture within the accounts provided by the participants. However, researchers may choose to use rich pictures alone. In those cases, a clear argument needs to be offered as to why different interpretations, other than the one belonging to the participant, would be a desirable goal of the research.

Logistical or practical issues we have encountered pertain to the initial hesitation of some participants to draw. Our approach has been to allow participants to try for a few minutes and if they still feel uncomfortable with the task, then they can withdraw participation. Most times, during the trial time, participants became engaged and less apprehensive about the idea of drawing. Remote interviews also pose logistical issues. Our approach

has been to conduct the interview via Skype or Zoom. Once participants have finalised their rich pictures, they take a photo and send it to the researcher via the platform. Although it is not a full-size version, the photo is a good enough alternative for the researcher to identify probing questions. The original rich picture is later mailed to us so that we keep original records.

Regardless of the type of challenge, researchers need to exercise constant ethical awareness and reflexivity. This is necessary in order to balance the desire to enhance data richness with the mandate to remain respectful of participant's experiences. Researchers should remain alert to the ethical considerations of confidentiality and ownership described in the literature.^{35,37,38} Clear discussions with participants about consent, how rich pictures may get disseminated, and for what audience, should be carefully conducted. These ethical considerations increase the need to fully examine the reasons for choosing rich pictures and place a duty on the researcher to guarantee that the advantages of pairing rich pictures with interviews versus interviews alone outweigh the additional ethical uncertainties.

DISCUSSION

Although new methods bring excitement to the field, it is our responsibility to also be cautious and insightful about their limitations. Rich pictures are a method in evolution in HPE research, with many unknowns about what is possible and what is optimal. We would like to end this paper with some of our reflections about opportunities and unresolved challenges in using rich pictures.

As a method in evolution, we must acknowledge that the 'rules of the game evolve as the game is played'. By that we mean that even with the amount of experience we have built, we continue to create and recreate ways of using rich pictures. This is a process that is familiar to most methods in qualitative research. For instance, grounded theory's evolution involved researchers who were developing and writing about the methodology as they were applying it. We are going through a similar process, and from there a number of questions have emerged.

Working with a method that is not fully formed has opened offers opportunities for creativity, but also presents challenges demonstrating rigour. For

instance, our use of rich pictures has always included interviews. Our main rationale comes from our constructivist stance, but are interviews necessary? If not, how could we perform a stand-alone analysis of rich pictures and have it hold up as research in the field? What epistemological conversations do we need to engage in as a community? Also, we usually hear positive comments about the richness of the data we can get by using rich pictures. At first glance, it sounds like a great benefit, but by contrast, what do we do when we have too much richness? Finally, even in writing this paper, we have struggled with striking a balance between describing our approach to the use of rich pictures and leaving room for continuing to evolve the method. How much vulnerability are we, as a community, willing to show when engaged in writing about methodological growth?

CONCLUSIONS

In this paper, we shared some of our experiences using rich pictures as a way of exploring complexity in HPE. As rich pictures have only recently entered the field of HPE, we feel there is much room to further explore their merits for different purposes. As such, we ended the paper with more questions than answers. In the spirit of these questions, we hope readers of this paper will resist the idea of looking for a cookbook description of rich pictures and rather engage with us in advancing this methodological conversation.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Examples of drawing patterns.

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