Visualising the body: health professionals' perceptions of their clinical drawing practices.

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ABSTRACT

Health professionals routinely draw for patients, carers and colleagues as part of clinical communication in order to describe, explain and record. The drawings that result are either discarded, kept by patients or become part of a patient's records. Some health professionals also draw when engaged in teaching and training in clinical contexts. Very little literature has acknowledged that such drawing regularly takes place and there does not appear to have been formal research into the reasons, benefits or disadvantages of these drawing practices. This study examined the perceptions of seven UK health professionals, from different specialties, who draw as part of their daily professional practice. In this qualitative study, the researchers carried out in-depth individual interviews, during which they invited participants to make exemplar drawings. The findings included that for nearly all, drawing was a flexible, sensitive and spontaneous method of visualising information. In making explanatory drawings for patients, health professionals were taking care to provide information in a way that was accessible and personally relevant. Whilst one participant indicated that 'live' drawing had been superseded by professionally illustrated material and video in their profession, the other participants believed that drawing remained the more practical, effective and emotionally appropriate method of visualising explanations. Health professionals convey and clarify knowledge for one another through drawing, yet it does not appear to be included in their training. Drawing was also described as useful and often pleasurable for the professionals themselves. Further research is now needed to explore patients' perspectives on such drawing practices.

INTRODUCTION

Manual drawing is a communication method that occurs within clinical settings.[1] [2] [3] [4] It is carried out by a health professional for a patient or patient's carer, for colleagues, trainees or students. Such drawings are made and offered in conjunction with spoken or written explanations (sometimes with annotations added to the drawing) and deal with anatomy, health conditions and planned treatments.[5] (Figure 1) This drawing is spontaneous and informal, providing speedy, simplified and often diagrammatic visual information. It is characterised by being tailored very specifically to the patient's health condition and body, and incorporates personalised information

needs based on the patient's level of comprehension and emotional state, which evidence suggests is important.[6] An extensive search has found no published literature systematically examining the nature, role or significance of the drawing 'by hand' that takes place live within clinical settings, although research is beginning to be carried out into it.[7 8] The few studies that refer to drawing are primarily concerned with the transition to electronic patient records systems or with the potential for developing a 'language' of icons. To this extent, it appears to be a tacit and largely unexamined communicative and recording practice. In a study on 'medicons', it was commented in relation to hand drawing that, 'to our knowledge, no research has ever been performed to investigate this issue.'[9]

A UK parliamentary inquiry report has emphasised the importance of the relationship between arts and healthcare and referred to the need to integrate the arts within medical training and medical humanities.[10] The arts and healthcare movement is concerned with inquiring into and explicating the perceptions and experiences of healthcare professionals and patients and there has been a significant growth of interest in forms of visualising [11 12] and narrating[13] illness experience, including within the new field of graphic medicine. This takes into account both professional and patient perspectives through combinations of drawing and text.[14] The drawing that is the subject of this study, however, does not appear to be formally taught to health professionals, unless offered as an optional 'arts' component or within anatomy teaching for medical students.[15 16 17 18] The researchers initially identified drawing in clinical settings as a practice of research interest because they had benefited from it personally as patients and carers. As their interest in it grew and they sought to find out more about its extent and nature, they came across many health professionals who regularly drew as part of their professional work. This growing body of anecdotal evidence suggested that drawing might be embedded within clinical communication in the UK health system, although no data or published research could be found that substantiated this, or indicated that drawing was likely to occur in particular specialisms. As a phenomenon, such drawing seemed deserving of far greater investigation and analysis.

The definition of 'drawing' used in this article emerged from the researchers' preliminary experiences of being drawn for in clinical settings and their numerous anecdotal exchanges with health professionals. 'Drawing' appeared to be the term most frequently used by health professionals, referring to the manual process of visualising an object, process, system or idea with a mark-making implement (usually a pencil or pen) on a substrate (a notepad or scrap of

paper). The researchers had no assumptions or expectations about the type of drawing that might be found, as the drawings gathered anecdotally prior to the study were very different in nature, from cartoon-like and pictorial drawings through to schematic representations. There are alternate terms and phrases including sketching, the making of diagrams and, in the art world in particular, 'mark-making'. However the umberella term 'drawing' is more common, often used as synonymous with the other terms and, for the purposes of this study, more inclusive. Drawing can be either a noun (referring to a drawn output, 'a drawing') or a verb (the act or process of drawing). Within this study, which is concerned with drawing in clinical settings, the focus was primarily on the significance of the process or act of drawing as part of direct, interpersonal communication. The focus was to a lesser extent on the way in which the resulting drawings are used. [19] [20] [21] The research question formulated for the study was, therefore: 'what are health professionals' perceptions and experiences of making drawings as part of communication with patients and colleagues?'

METHODOLOGY AND METHODS

The researchers designed a qualitative study that would enable them to explore health professionals' experiences and perceptions of clinical drawing.[22] As the primary aim of this study was to investigate a territory about which very little appeared to be published, the focus was on carrying out a deep exploration of the individual perspectives of a small number of participants.[23] On this basis the in-depth interview was selected as the most appropriate method to gather 'rich description'.[24] With so little formal data available on the prevalence, application or purpose of drawing in clinical settings, it was not known which specialisms or types of professional were most likely to be involved. In addition, as this was an unfunded study, it was pragmatically necessary to recruit from one NHS trust within easy travel range for the researchers, so that heavily-committed health professional participants could be interviewed as close as possible to their work place. Once ethical approval had been granted (number redacted for peer review) an open invitation to participate in the study was circulated by email within the trust. A criterion sampling approach was adopted, with the recruitment call inviting health professionals who drew regularly within their working lives to take part in the study, regardless of role, grade or specialism, whether for patients, colleagues or others. No patients or patient representatives were involved in this study, as it focussed specifically on the experience of health professionals.

In total, 21 initial responses to the invitation were received. Respondents were from paediatrics, midwifery, clinical pharmacy, physiotherapy, maternity care, cardiology, renal medicine, dietetics, neurology, day surgery, radiography, occupational therapy and histopathology. Responses were also received from a clinical investigations and research unit, from a medical student and a health care assistant. Of these, two expressed general interest in the study but were ineligible as not engaged in clinical drawing themselves. The other initial respondents were either too busy to be interviewed or did not respond to further communication. Of the 21 respondents, seven met the criteria and consented to be interviewed. This number was considered sufficient for this qualitative exploratory study using in-depth interviews[25] and the research proceeded. Several of the respondents made clear their interest in and curiosity about the study in a way that suggested that they might have had a pre-existing interest in art, visual practices of communication or drawing, or all of these. In some cases participants explicitly voiced this in interview ('I like art'; 'I like drawing') and one participant described a career in the arts before retraining as a nurse. It is acknowledged, therefore, that the sample may have been positively inclined towards the benefits of visual communication. The seven participants in the study were a healthcare assistant, a neurology research nurse who had previously worked on an endoscopy ward, a consultant histopathologist, an occupational therapist, a day surgery nurse, a paediatrician whose clinical experience had been mainly in Nigeria, and a staff nurse in a cardiac catheter laboratory (see Appendix 1 for participant overview and Appendix 2 for a fuller description of the interview protocol).

The researchers transcribed the interviews verbatim. The drawings made during the research interviews were retained, with permission, by the researchers (see Figures 2 – 6). In the first stage of analysis the researchers each made a detailed reading of every transcript to gain a sense of the worldview of the seven participants. In the second stage, the two researchers separately reviewed each transcript to identify comments that they felt illuminated the subject of clinical drawing. The researchers then discussed the selected comments in detail, analysed and coded them in terms of the reasons, scenarios and contexts, applications and preferences described in relation to clinical drawing and identified the relationships between these coded elements to produce the initial set of themes. The researchers tested and refined these themes further by rereading the individual transcripts, looking again at how each participant had presented their reasons for and approach to drawing, and the significance they had ascribed to it. This lead to the realisation that some of

the initial themes were so similar and interconnected that they would be more meaningful if grouped under a broader thematic heading. For example, rather than having separate themes on how drawing was carried out for different types of patient explanation, it was more meaningful to have a single theme about drawing for patient explanation, which was then explored in detail through a diverse range of examples.

Drawing was deployed as a method in this study to provide a trigger for participants to explore the research question more deeply, to be part of the data set for analysis and to provide a set of examples of the phenomenon that could be used to illustrate the results. When participants drew for the researchers, they involved themselves in the very embodied activity they were describing. The researchers made notes on how each participant approached drawing in the interview, including their expressed attitude to drawing, whether they talked whilst they drew and whether in doing so they talked to the researchers as though they were 'patients'. The drawings made were aligned to the relevant point in the transcript of each interview. Several participants emphasised that drawing was particularly useful, alongside talk and annotation, as part of a live interpersonal exchange. For some, completed drawings at the end of the consultation or discussion were of limited use or were simply not considered permanent objects, being almost instantly thrown away. The researchers were therefore primarily focused on the data relating to the act or process of drawing within the live moment of communication, as this related most closely to the research question, but they also considered a range of qualities of the drawings themselves. This included use of the paper as a drawing 'space', including where multiple drawings were made on one sheet, the weight of marks, the use of graphic devices to depict humanity or individuality in patients and the use of diagrammatic methods to represent processes and properties. At the final stage of analysis, the themes were reviewed against a 'composite summary' of each participant's interview together with their set of drawings, to ensure that unique or dissonant voices and views had not been supressed or downplayed.[26]

ANALYSIS AND FINDINGS

Introduction to the themes

The interviews with participants indicated that drawings were made for a range of different purposes (see Figure 1 for overview) and to differing extents across health professional specialisms and contexts. In deciding to make a drawing the participants weighed up many factors: the specific needs of the patient, carer or colleague, the context they were working in, and their professional experience and knowledge. The likelihood of clinical drawing taking place varied. For example the health care assistant commented that on a maternity ward, where she was working at the time of interview, 'there isn't necessarily a situation' requiring drawing. Although this participant described having made drawings previously as a health care assistant on a dementia ward, this had been because she was encouraged rather than required to do so by a ward sister with a special interest in creative activities. All seven participants noted that drawing was not a practice that was normally discussed, nor was it expected, recommended or required as a means of communicating in their daily professional lives. However most participants described a regular and varied practice of drawing that they appeared to turn to instinctively.

The data analysis produced five themes in relation to clinical drawing. The first was that by making drawings the participants in the study felt able to be highly selective in the information they provided to patients. They emphasised the immediacy of picking up a pen to create a drawing as they were talking and highlighted that by doing this they could ensure they were providing an explanation that was accessible at the right level of comprehension and in a way that was personally relevant to the patient. The second theme was that when participants drew for patients, they were taking care to explain clearly. They were consciously engaging in an emotionally sensitive process of communication involving experience and fine judgments about when and what to draw, depending on the level of distress or need for information displayed by the patient. The third theme concerned the way in which clinical drawing functioned as a tacit and instinctive medium of knowledge sharing and exchange with colleagues and students and the fourth theme revealed that some participants gained pleasure from making drawings. Whilst this was to some extent because they felt it helped them offer the best possible information or explanation, there was also evidence of a sense of aesthetic satisfaction in completing a good image. Whilst these four themes were evident across six of the interviews, there was a distinctly different view given in the seventh interview about the more limited usefulness of drawing in current occupational therapy (OT) practice. The fifth theme therefore explores this participant's perception that in OT, drawing has been superseded by approved and standardised clinical

information, which is seen as maintaining the quality and consistency of patient information.

Theme one. Effective explanation for patients through drawing: selective, accessible and personally relevant

The explanatory power of drawing for patients and carers was a particularly powerful theme. The cardiac nurse described how he used diagrammatic drawing 'daily' to help patients understand their condition, focusing for example on the different impacts and implications of heart attacks, depending on their location and how extensive they had been. The neonatal paediatrician similarly talked of her experiences of using drawing as part of giving routine explanations in her clinical work in Nigeria. She explained that she frequently drew to explain anatomy and physiology, the nature of a particular baby's condition and 'the possibility of surgical remedy' to his or her parents: 'I'd also need to draw the possible outcomes'. The making of a drawing was described as part of an iterative method of communicating with parents, in which the paediatrician would create a visual explanation, check whether it had been understood and, if not, repeat or try to improve the explanation: 'so you draw and then draw again and then ask. The points or the bits where she's [the mother is] a bit hazy and really does not understand, you now draw again. You'd actually have to possibly do a little bit of anatomy you know, teaching her.' Several of the professionals commented that the level of knowledge of anatomy among patients and carers could be very low. With explanatory drawing, as the neurology research nurse described, the patient was able to interact and seek further clarification: 'They can kind of physically point at something and ask 'what's this bit, what's that'. The day nurse emphasised the value to patients of using drawing to create a visually-led explanation: 'having that drawing, that visual tool, is what finally fixes in someone's head that is what's happened'. She described a number of clinical scenarios where she felt that patients quickly forgot, or perhaps did not initially receive the explanation they wanted: 'often the patient sits there in the consulting room and they want the doctor to tell them what they are going to do, and if they don't ask the right questions maybe the doctor doesn't do the writing, or the, the, drawing…'

The value of drawing was linked to the perception that verbal explanations were often insufficient or inadequate. The cardiac staff nurse noted the limitations of trying to provide an oral

explanation without really knowing whether a patient may 'have taken it in the wrong way'. The day surgery nurse offered a slightly different perspective on this, by noting that patients needed to be treated on an 'individual basis' and that patient information needs varied: 'If someone seems to understand exactly what is going on and probably doesn't really need to prompt the questions that would lead me to do a drawing. It tends to be the ones that, that erm, ask the questions'. The neurology research nurse, whose accounts of drawing related in particular to a previous role he had on an endoscopy ward, emphasised how drawing enabled slow, step-by-step and simplified explanations. He used simple, graphic drawings that were comic-like in style to provide explanations and reassurance to patients, saying that 'I think it is the most effective communication tool we kind of have, really, myself, so that's why I do always want to draw.' It was possible to 'focus on one small thing and you make it kind of simple, I think it clarifies things quite a lot better for them [the patients]'. This can be seen in Figure 2, where his drawing is pictorial in the way it represents the chest and outline of the torso, so that the image is possible to relate to easily without any specialist knowledge. The large bowel and directional arrows are then drawn selectively to help explain the endoscopy procedure to the patient, so that only the part of the anatomy relevant to the patient's condition, diagnosis and treatment is shown. The nurse added a polyp to this drawing to show how he might explain to a patient who has had the endoscopy the difference between a cancer or a benign polyp. He also described how drawing could easily be used in conjunction with both talk and gesture. He could make a drawing, talk to the patient at the same time and 'then be moving back to gestures on my own body, I'd often use my own body as a kind of tool'. Health professionals could, then, make the drawings and accompanying explanations personally targeted to the patient, taking into account the level of comprehension and anxiety a patient was experiencing. As the nurse explained, patients 'kind of want to know what you'll do if you find something …'.

[Insert Figure 2 here]

The day surgery nurse made a similar point: 'Sometimes people don't really understand their own anatomy. Some patients ask well you know, 'why are they taking out the fallopian tube? Where is it? I don't quite understand'. And so you just do a little drawing and say well that bit's coming out, the ovaries are going to stay, so don't worry about that, they are taking that little bit out and then they clip the ends.' She made a sketch (Figure 3) using fast, fluid marks on a small piece of paper

as an exemplar of how she might use drawing as part of conversation with a patient. The nurse offered the explanation as she made the drawing in the research interview, focussing on creating a simplified representation of the relevant organs. She did not include an outline of the body, concentrating rather on making heavier lines as she talked to emphasise where the surgical incisions would be, and offering reassuring comments at the same time. In this way the drawing and talk were mutually reinforcing. (Figure 3)

[Insert Figure 3 here]

Explanations needed to be relatable as well as comprehensible. The neonatal paediatrician described how she would refer to objects and experiences that the parents in Nigeria might be familiar with to help them make sense of the drawing: 'The other thing I use is like, ok a number of them are housewives, they go to the market – buying meat and looking so, have you seen the heart of a cow before it's been cut? Yes. Great, so the heart of the human being looks a little bit similar, but of course it's a lot smaller and it starts from that.' A common theme arising from most of the interviews, therefore, was that as a communication method, manual drawing was very adaptable and could be made relevant to a wide range of different patients and contexts.

This theme of adaptability and relevance was underlined by several of the participants, who stressed that creating manual sketches and diagrams was preferable to using other explanatory aids. One reason given for this was that drawing was one of the speediest and most practical of methods: for example, the day surgery nurse described how she might need to provide an explanation to someone emerging from theatre on a trolley post-procedure, and 'you tend to be quite quick, so you'll grab a pen, grab some paper, draw it like that'. The other reason for preferring drawing was that it could express exactly what seemed most important, allowing for emphasis and repetition. The cardiac nurse explained that whilst there were pre-printed card illustrations available, showing different aspects of heart anatomy and treatment, it could be quite difficult to identify exactly which one you needed during a dialogue:

> to find a stent and then quickly switch, swap in conversation to the catheter, erm, I'm not quite sure if I could find that, but I can draw it, or I can draw you through it, just, it's the ease of flittering between whatever you want to know, you know, just jump between

different things as things remind you and then if we have a question …

The nurse commented that pre-prepared images and illustrations were: 'too detailed, too regimented, too erm, one-type, rather than fluid … our pictures get drawn over and over again when you are explaining things'. The neurology research nurse similarly remarked that whilst there were formal explanatory aids available for use with the patients, such as a '3D map of the bowel' used on the endoscopy ward, 'it had everything wrong with it, and it was so disgusting that I, I never used it. I would always draw my own.' Several of the participants saw formal printed illustrations as problematic because the anatomy was represented in a static and standardised way that did not relate to the patient's personal experience or issue of concern. The notion that information can be overwhelming or poorly targeted for patients surfaced repeatedly. In particular, the health professionals felt that it was extremely important to give patients information in a way that related directly to their condition and their body, and that was not anxiety-provoking or horrifying. Drawing, they felt, supported them in giving relevant and appropriate explanations. The primary usefulness of this type of drawing was in the moment of dialogue and many drawings were thrown away afterwards.

It is also important to note, in relation to this theme, that several of the interviews made reference to artistic drawing quality ('good' or 'bad' drawing). As the cardiac nurse observed, reviewing a drawing he had made during his interview, 'I keep looking at that and thinking how terrible it is, such a horrible drawing, but, it, it, they serve a function'. Drawing could be described as 'bad' by participants and yet at the same time described as valuable in communicating and enabling understanding: 'however poor my drawing is, just to give some visual idea of what is going on inside them'. To visualise information effectively, drawing did not need to be artistically impressive. The neurology nurse referred to his slight concern that highly competent artistic drawing or drawings that included depictions of facial features or hair might be perceived as 'flippant', a point discussed again under the fifth theme. This was not evident in the other participant interviews, however. The paediatrician made a drawing of a baby with a large swelling on its head during her interview, and drew a sad face on it. Here there was no indication from this participant that the inclusion of facial expression was flippant, it seemed rather to be an acknowledgement of the suffering the baby's condition brought with it. When some participants referred to their drawing as 'bad' it generally appeared to be a defence against being judged out

of context, or on artistic grounds. Even when referring to their drawings as 'bad', participants were at the same time asserting their explanatory and communicative power.

Theme two. The emotional sensitivity of drawing: an offering of time and care

Drawing was also seen as a distinctly sensitive mode of explanation, symbolic of a caring interaction where the health professional was taking time to communicate with a patient or carer. The day surgery nurse described how she often made drawings in the course of her professional life as a 'very informal thing between me and the patient'. She described how post-operative patients often became 'stage-struck' at the surgeon's visit and would fail to ask questions they wanted answers to. In this scenario she would offer to draw explanations for them and 'most of them, if not all of them, find it very comforting, because they can really see.' The idea that drawing offers comfort was echoed by the cardiac nurse, who noted that displaying knowledge through drawing seemed to reassure older patients about the expertise of 'very young-looking' staff who they might otherwise feel insecure with. Whilst this comment was offered primarily as evidence that drawing can have a soothing impact on some patients, it also relates to the theme of drawing as a knowledge-based practice, which is discussed further in the section on theme three below. In several of the interviews, drawing was described as contributing towards social exchange and as a communication channel. The health care assistant, for example, described how she drew as a naturalistic form of social interaction with patients living with dementia who had limited or no capacity for speech. She recalled one patient who 'couldn't communicate at all' through speech, yet 'if you started to draw with her she would interact with you by drawing.' This interaction was described like a quiet choreography of pencils, paper and hands: 'you'd start to draw and then maybe you wouldn't even say to them that you're going to draw you'd just sit down with them at the table and then draw and then just allow them to start to draw things themselves if they wanted to.'

In a different setting, the paediatrician explained that she used drawing during operative procedures. She would take breaks from the operating theatre not only to ensure parents were kept informed about progress and developments but to 'carry them along as it were. So that they don't feel left out, they don't feel like we have just taken over the baby and we are doing what we think is best without taking into consideration how they feel and what they think is, um, best for their own babies.' To illustrate the type of scenario that might be involved here, she drew an image of conjoined twins from an operation she had been attending and explained how she had

used this drawing to communicate the likely outcome to the parents. These drawings filled most of the paper and were drawn with slow, deliberate and firm pencil marks. Again, the drawings were highly simplified and focussed on the outlines of the key organs concerned, which in this case were the shared liver, and hearts joined at the apex, in conjoined twins. The paediatrician emphasised the relational nature of this type of drawing, in that she would draw her simple, firm and clear drawings to explain the most crucial aspect of the babies' condition and then use this to gauge whether the parents understood. If they did not understand she would draw again, often repeatedly. (Figure 4)

[Figure 4 here]

As the participants described particular experiences of drawing during their research interviews, and made exemplar drawings for the researchers, they also provided the explanations that they would normally provide to patients. This often involved the participant slipping into a performative mode in which they 'acted out' their typical method of explaining to a patient, speaking to the researchers as though they were patients. This demonstrated to the researchers how drawing helped the participants slow their explanations down, allowing them time to pause and think more carefully. It also enabled the researchers to see how this would help patients to feel attended to, able to absorb and reflect on the information being given. As the day surgery nurse indicated, 'I think drawing something for people, they seem to be satisfied with that and it makes them feel comfortable'.

For the neonatal paediatrician, the cultural and emotional appropriateness of drawing as a medium was particularly important. She described how in Nigeria, drawing was routinely used in order to communicate. It has a close relationship to the graphical quality of Arabic text and wasn't seen as 'new or strange' in a hospital setting. Additionally, she had found that due to superstitious beliefs, showing images of photographic medical illustrations to explain the nature of a baby's condition caused great alarm and distress to parents, whereas creating a drawing or diagram enabled important information to be successfully and more calmly passed on. The paediatrician made a further point about the role of drawing in levelling the power relations between a doctor and patients or carers. As doctors had a deep body of knowledge they could, she said, 'have a way of being paternalistic over patients. But the mother is the mother, so really drawing it really

helps, it did sort of like, bridge the gap. They could now see things, they had been given information so that they could now actually make an informed decision.' The consultant histopathologist was similarly concerned with the capacity of manual drawing to be an emotionally sensitive and levelling method of providing information. He used drawing in providing explanations at inquests, often attended by the family of the deceased individual, where photographs or pre-prepared illustrations might be overwhelming. The histopathologist explained that his drawings could be very helpful precisely because they 'remove a bit of emotional content'. If he made a drawing, he pointed out, it wasn't traditionally representative: it 'doesn't look like the patient. It doesn't look like anything or anyone they ever knew': rather, it was highly selective and often diagrammatic. This enabled upsetting and complex information to be more easily absorbed. The neurology research nurse extended this point, commenting that he considered carefully when it was appropriate to draw for patients at all: 'In high emotion situations … I want them to know that I am there and I'm present, in which case I won't do anything with my hands or anything that causes me to look away from the patient. I'll try and in the process to maintain eye contact'. For the participants there was a strong sense that drawing was deeply integrated within a caring approach towards patients and their families. Such drawing practices were shaped by interpersonal awareness.

Theme three. Drawing as a tacit medium of information exchange with colleagues and students

In addition to drawing for patients and carers, health professionals draw for one another, whether as one of their methods of formal teaching, adding information to clinical records for the use of others, or sharing and clarifying knowledge in conversations and discussions. Sometimes such drawing would be part of a process of trying to understand or make thoughts clear for the health professional doing the drawing, as well as for those being drawn for. In these contexts the power dynamics and interpersonal relationships within which drawing takes place are different to those that exist between a health professional and a patient during a consultation. There is often a clearer sense not only of the knowledge that other health professionals can be assumed to have, or the exact knowledge that needs to be acquired in the case of students, but also an understanding of the context in which others work, their duties and pressures. For example, the neurology research nurse regularly drew to keep a record of changes in the patient notes for doctors, who generally had less direct contact with the patients. Whereas patients' ability to

absorb explanations might be compromised by fear, anxiety or confusion, a level of emotional resilience and ability to absorb information speedily tends to be assumed between colleagues and, to a large extent, on the part of students.

The consultant histopathologist explained that he drew for colleagues and for medical students, when he was teaching. This drawing process revolved quite explicitly around the issue of knowledge in the context of a formal duty to explain and educate. The histopathologist described how he would typically be looking, with the student, through a two-headed microscope at a cell sample on a slide. Creating a simplified visual depiction of the form of these was necessary and frequent in this scenario, he said, because 'we had no other way of communicating what was there … the medical students didn't yet have the language to understand what I was talking about if I was describing the structure under the microscope'. This was described as a form of explanation in action: 'We draw', the consultant explained, 'to talk to each other'. (Figure 5)

[Insert Figure 5 here]

The histopathologist explained that he knew when the student had begun to understand the structures they were looking at under the microscope because 'they take the pen out of my hand and start drawing over what I've just done … then we're all in the same place talking about the same thing'. He further described how he used drawing to communicate with colleagues. Here drawing, often in the form of a 'quick diagram', occurred so that health professionals could 'explain to each other where things are, what they've done and why'. In figure 5 it is possible to see that the lines have been drawn at speed and with confidence. There is no need for precision in representing the slides themselves and the cells become a simple set of geometric shapes to encourage the student to recognise and identify the necessary features. For the histopathology consultant, drawing was a natural and regular medium for communication: 'one comes to realise that there are particular things that people don't understand very easily and I've learnt that if I draw it seems to get the message across more quickly.' Furthermore, 'there are things that you can do when you're drawing that it's not easy to find the language to explain'. In this comment there is a suggestion that drawing can enable the exchange of understanding where verbal articulation might not available. Both the histopathologist and the research nurse made the related but important point that drawing was also helpful to their own thinking: in drawing, the

research nurse explained, health professionals were 'also helping ourselves … it makes your thoughts more linear'. For the consultant histopathologist, drawing could help 'me formulate my explanation'. [27]

The idea that clinical drawing could be a type of tacit medium or currency of knowledge between peers in the health system was suggested in several interviews. The clearest case of this came from the cardiac nurse, who described how his capacity to draw the anatomy of the heart had gained him his job: 'I actually got my job here by drawing a picture'. He narrated the story of his job interview, in which he had been asked if he could draw the heart. He described how he responded by asking what kind of drawing was required: one that displayed the hydraulics of the heart, the electrical system, or the structure. The level of knowledge he displayed in producing the subsequent drawings for his interview panel had, he felt, lead to him being offered his job. He routinely used drawing to communicate with colleagues, for example through adding drawing to pre-printed forms in order to indicate where a blockage was, or in drawing observations from a patient's procedure on a whiteboard and using this as a basis for discussion and clarification. He also described using drawing in the teaching of new staff.

Whilst most participants explained to the researchers how drawing helped them clarify, explain and record clinical information and knowledge with colleagues and students, this was on the whole described as a tacit practice and as an approach they had adopted intuitively or instinctively. None of the participants had been taught or even informally encouraged to draw in their professional roles, nor could any of the participants could remember discussing clinical drawing with higher education teachers or with peers. The neurology research nurse expressed the view that drawing was a fairly common practice but that it was not spoken of, 'it's just something I think we all do a fair bit, with obviously varying, very varying results' and yet he also commented that 'only certain people draw [….] [drawing] is just kind of never really talked about between us, and in training or anything you never see it'. The consultant histopathologist referred back to his school education, saying that 'a very normal part of learning biology used to be about learning to draw stuff' and that you could draw something 'in a way that suddenly people can understand'. However this had not extended to his higher education. Some of the participants recalled drawing to help their undergraduate learning and revision but not because this had been directly encouraged. The day surgery nurse, for example, explained that 'when you are training to

be a nurse there is an awful lot of drawing … surgeons will come .. and they'll do the diagram'. However she clarified that none of her teachers had suggested the trainee nurses themselves might wish to draw, nor that it could be useful to draw for patients. The nurse added that 'It's just something that I think is quite a nice thing to do'. Despite the importance and usefulness the health professionals ascribed to the role of clinical drawing in their interviews, it seemed to have occupied an unacknowledged place within their training and institutions of employment.

Theme four. The pleasure in drawing

The first three themes in the analysis expose the ways in which drawing can be seen as instrumental. It became clear, however, that there were dimensions to some of the participants' experiences of drawing that were as much about professional and personal pride and aesthetic pleasure. This was illustrated, for example, by the staff nurse in the cardiac catheter laboratory, who acknowledged the pleasure he felt in being able to render drawings well as part of his job. He commented that it was 'nice to show off … because people will respond to you knowing … if you can show that you are knowledgeable, it puts them at ease'. (Figure 6) Here, whilst there is clearly a value in reassuring patients that you are a knowledgeable health professional, there is a further implication that this is a matter of personal and job satisfaction. His drawings filled the paper and he described how he had 'always liked drawing', whilst acknowledging that 'some people don't'. The cardiac nurse further displayed an interest and pleasure in the drawing materials provided for the interview. Whilst the researchers had chosen materials they thought were plain and basic, to avoid suggesting that they were expecting 'artistic' drawings, the nurse noted 'it's very nice paper', and commented on the softness (7B) of the pencil he had chosen to draw with.

[Insert Figure 6 here]

One of the points made by the day surgery nurse was that her tendency to draw came from her own wish to receive information visually, and her enjoyment of this mode of communication. Another of the participants, the neurology research nurse, explained that he had previously worked as an illustrator before retraining to work as a nurse. His drawings showed a number of differences to the other participants as he chose to use larger pieces of paper and make several small, carefully placed, neat drawings on each. He also talked of the pleasures of drawing and

described how, at times, he had to consciously rein himself in, for example, 'to stop myself getting too detailed'. One of the drawings he made during his interview, of a patient with rashes on his face and shoulders, included a characterful face, hair and ears, none of which were essential for explanation but which gave the drawing an appealing and accessible quality. He referred to his instinct to draw, for example, 'proper, almost anatomically correct lungs'. He conveyed professional pride in his drawing, which was often received very positively, yet he had an edge of concern that colleagues might perceive his drawings as 'flippant' if they became too elaborate. He was the only participant to express this concern and it seemed to relate to his prior career as an illustrator and his unusual level of artistic skill. The research nurse also gave the most extended account of the pleasures of drawing. He described how he preferred to incorporate colour into his drawings, both because it 'makes more sense' but also because 'we may as well occasionally use the odd nice looking, you know, vaguely nice looking interesting thing'. Most participants described or hinted at a sense of sensory, aesthetic pleasure (the drawing looked attractive) or professional pride (the drawing was seen to help explain something successfully) when making drawings in their daily work. The day surgery nurse explained that 'I like drawing and I like art, and I think seeing something visually is quite dynamic, I think it gets into people more … easier'. She described how, in scrubbing in for the theatre, she would be handling surgical equipment and devices: 'and there is something very satisfying, I think, about drawing that little plate and explaining to the patient exactly what is going on inside and how it kind of works.' Here the participants seemed to suggest that visual (drawn) information could be interesting and stimulating and that these were desirable qualities both for patients and health professionals alike.

Theme five. The standardisation of information and its impact in discouraging clinical drawing

One of the participants revealed at the beginning of her interview that she did not draw very much as part of her role any more. She described that in her profession of occupational therapy, drawing had been largely replaced by alternative visual methods of communicating and explaining and this was due to an increasing emphasis within her profession on the need for information to be 'standardised'. This notion of standardisation was, she explained, discussed in her profession as essential for ensuring higher quality and more consistent information for patients. The researchers were somewhat surprised at this, as the study advert and the eligibility

criteria on the participant information sheet had clearly focussed on health professionals who regularly drew as part of their work. However it seemed important to explore further the participant's experience and perceptions of the decline of drawing in her profession. This was the single instance of this view during the study. All participants had been asked whether they were aware of any standardization in clinical drawing and most knew of a common diagrammatical representation for the abdomen and for the way the lung fields tended to be represented, but these appeared to be the exceptions. Representations of routinely observed features such as rashes or swellings were rendered quite differently, yet most participants did not appear to perceive this as in any way problematic. As there was very little connection between the OT's views and experiences of the standardisation issue and those of the other participants, it was decided that this needed to be analysed as a theme in its own right.

The participant explained that, in her view, it had become far less common for OTs to draw to explain conditions or equipment use to patients, as they were encouraged to use either digital proformas that they printed off from their computers, or clinically-approved illustrated leaflets. Where a more customised approach was necessary in explaining an exercise or aid she explained that patients often used their mobile phones to take photographs or short videos of the OT's explanation or demonstration. She described how it had, in the past, been usual to 'use either pictures or drawing to explain to the patient' what a particular piece of equipment looked like, where it might be located in the patient's home or how a physical aid for the body might be worn and used. During the interview the participant produced drawings of joints and finger splints, which she visualised and explained clearly. However, in doing so she reiterated the point that her profession now required quality standardised information and that patients liked to have information to refer to on their mobile phones where possible. She summarised that there were a few circumstances in which an OT would still draw, such as where an image of a particular piece of equipment couldn't be found or when information leaflet supplies had run out. However she was clear that for OTs, in most situations, computer-generated forms or advice leaflets were used. This perception and experience stood out as distinctly different from those of the other participants. Whilst there were references from other participants to some limitations in the uses of clinical drawing, these were in the context of their overwhelmingly positive view of it. For example, one participant commented that changes underway in the UK health service might potentially inhibit the practice of clinical drawing, in particular due to the introduction of pre-scanned slides for student teaching, and the introduction of an electronic patient records system.

This participant was nevertheless unequivocal about the value of drawing for his own professional practice.

DISCUSSION

The themes outlined in the analysis add significantly to the existing literature, as no formal research into drawing in clinical settings has yet been found.[28] [29] [30] There was a clear emphasis from the study's participants that verbal explanation alone, whether written, printed or spoken, and particularly at times of anxiety and confusion, is not sufficient to ensure patient understanding. There is a great deal of technical language used in medicine and the health professions and even where professionals are making considerable efforts to 'translate' this, to use simpler language and provide helpful context for patients, patients are not always able to receive, comprehend or process written and spoken information about their condition or treatment. There were particular factors mentioned that contributed to this, for example, the day surgery nurse's reference to patients being 'awed' by surgeons on their post-operative rounds and not retaining what they had been told by them. There has been interest in the value of visual methods in clinical communication to support patient understanding, such as through printed informational material with illustrations. One participant in the study highlighted that her profession preferred the use of approved printed materials on the grounds they were better quality and more consistent for patients. However the other participants focussed on the variability and adaptability (inconsistency) of drawing as of great importance and value. Drawing could be used with patients in a wide range of situations as part of an empathic communication strategy developed through experience. This involved establishing what the patient had understood, what they would like to know or discuss, and making explanatory drawings whilst talking in order to help the patient make sense of particular anatomical or procedural details. This study highlights the significance of a patient being able to look at a drawing being made and relating it directly to their own body and circumstances. Such drawings tend to include only those elements of highly complex systems or processes that need to be seen and understood. This type of drawing, including what some participants referred to as 'bad' drawing, is intuitively mediated and managed to provide the most directly and personally relevant information in a form that can be successfully consumed and digested. It is also of a different significance to the generic information produced to inform patients because it is customised, produced spontaneously at the moment of need and yet is in a form that patients can physically hold and take time to look at.

This can allow patients crucial opportunities to pose further questions and request clarifications. There is a clear suggestion from this exploratory study that where clinical drawing is being used it is enhancing helpful and caring dialogue and patient understanding in a range of settings, yet there appears to be little or no reference to this in the literature or in guidelines and protocols. This study suggests that drawing, in conjunction with other empathic methods, might be an important tool in clinical communication. There is a need to investigate further the situations, applications and conditions under which it might be considered good practice.

Participants described clinical drawing as a flexible, adaptable and spontaneous method of communication and explanation. It is a method that can be personalised to support patient understanding but also to help order and clarify the thoughts of the health professionals themselves. The participants not only made clear the amount of professional experience and knowledge, judgement, emotional sensitivity and care that was involved in clinical drawing for patients but also the specific value of drawing with peers and students. Drawing sometimes allowed knowledge to be shared visually when it could not be easily verbalised. For example, it could allow understanding to develop in a context where there was no shared language (such as in looking at cell samples with a student under a microscope). Here, the process of drawing supported teaching and then provided the means by which student understanding could be recognised ('they take the pen out of your hand and start drawing'). Given these findings, it seems surprising that clinical drawing appears to be rarely, if ever, taught as a skill in health professionals' education or training, and equally surprising that it appears not to be generally discussed or acknowledged within health services. It has been argued elsewhere that communication skills training for clinicians is not sufficient and that patients need to be supported to improve their health literacy and their confidence in being actively involved in their care.[31] This study's finding, that drawing can potentially make clinical information personal, specific, clear and appropriate, needs to be further tested through research that investigates the patient perspective. Yet the evidence from this study suggests the positive potential in including drawing as a professional skill within medical and health education. [32]

CONCLUSION

The use of drawing has been explored within a number of non-health professions, and there is a literature on drawing as an educational and research approach. [31 32 33] However the specific type of drawing activity explored here, carried out by health professionals in clinical settings, is very

under-researched.

If good health communication is a key contributor to patient outcomes, this study indicates that the informed and sensitive use of drawing can be an important communication tool for health professionals, and could possibly be deployed to a far greater extent in a wide range of settings. It is certainly an area that requires further examination. This was a qualitative study of the perceptions of health professionals recruited on the basis that they already routinely used drawing in their daily clinical practice. It is therefore important that future research includes a survey into the extent of this practice and an investigation of the impact of the practice upon patients, exploring in more detail and from patients' perspectives whether being drawn for by health professionals is helpful, and if so, why, and in what circumstances. Given the practice of drawing appears to take place despite the lack of formal training or encouragement, consideration needs to be given to whether drawing should be addressed within health professional education and training. On the basis of this study, it is proposed that an understanding of the value of explanatory drawing could form an important part of the communication skill set for future health professionals.

NOTES

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