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CHAPTER XX

The Use of Vignettes for Conducting Healthcare Research

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ABSTRACT

Improving healthcare requires engaging with clinicians and patients in order to better understand their needs and expectations. Research methods that are used to conduct healthcare research are selected on the basis of study objectives and practicalities (i.e. finances, resources, time frame, etc.). The methodology of vignettes for conducting healthcare research consists of short descriptive scenarios and/or images to engage participants in hypothetical situations in which their emotional, psychological and sociological responses can be measured. They enable participants to feel comfortable in divulging responses that may be of a sensitive nature and provide insight to situations where they may have little or no experience. Two studies that used vignettes to conduct healthcare research will be discussed in terms of their objectives, conceptualisations, designs and developments, implementations, and outcomes. Validity of the vignettes as a methodology for conducting healthcare research will also be discussed.

Keywords: vignette, user needs, adolescent, medical device, diagnostic procedure, information provision

1 INRODUCTION TO VIGNETTES

Alexander and Becker (1978) define vignettes as ‘short descriptions of a person or social situation which contain precise references to what are thought to be the

most important factors in the decision-making or judgement-making process of respondents'. They are used by the World Health Organization (Murray, Özaltin, and Tandon, et al., 2003; and Salomon, Tandon, and Murray, et al., 2003) in the form of anchoring vignettes for cross population comparability where participants respond to appropriately designed vignettes using the same response scales as used to evaluate their self-assessed health. Responses to the vignettes can then be used to adjust different health expectations and ratings across different populations.

When attempting to gain a better understanding of participant perceptions and preferences of hypothetical situations where they may have little or no experience, content specific vignettes are used. They introduce participants to a scenario in which a character and/or artefact is to be the focus and explore the interacting dimensions of these on participant responses. They are particularly useful when characters and/or artefacts are manipulated in a controlled experiment to examine the effects of specific variables.

The design of vignettes is an elaborate process with the aim of obtaining appropriate data in response to study objectives. They require participants to submerge themselves into hypothetical situations and as such these situations need to be realistic, relevant, structured, comprehensible, consistent and concise. Vignettes require systematic variation and should be neutrally framed as to not influence participant responses. The following two studies discuss the design and implementation of vignettes to meet study objectives. Outcomes of the studies will also be discussed as will validity of the vignettes as a research methodology.

2 STUDY 1: USER NEEDS OF ADOLESCENTS WITH RESPECT TO MEDICAL DEVICES

The first study examined user needs of adolescents with respect to medical devices and involved three vignettes displaying modified versions of an acapella® for evaluation by adolescent users. The acapella® is a medical device that is used every day in the treatment of cystic fibrosis (CF) for airway clearance physiotherapy (Lannefors, Button, and McIlwaine, 2004). It is well documented that this aspect of treatment is poorly adhered to (Pendleton and David, 2000) and the aim of the research was to better meet the needs of the adolescent user so that the design of the device itself is not a barrier to regular physiotherapy.

Figure 1 The acapella®

2.1 Study design and development

To produce vignettes with appropriately designed modified versions of the acapella® a specification was developed based on data from proxies who had evaluated the device in a previous study (Lang, Martin, and Sharples, et al., 2010). Input from clinical experts was also used. Two design students from The University of Nottingham were employed to interpret the specification and produce new concepts of the acapella®. They also had access to the device, images of the device and abridged versions of qualitative data from the previous study.

Generating and scoping ideas was the first stage of designing new concepts of the acapella®. During this stage ideas were sketched and were then discussed with the researchers. Following constructive feedback and recommendations three ideas were selected to be developed. Development of the ideas involved several modifications and meetings to discuss the modifications. Once the ideas were developed to high standard conceptualisations they were rendered as computer aided design (CAD) outputs. The CAD of one of the acapella® concepts as used in its vignette is displayed in Figure 2. Annotations of the modifications made from the original acapella® are also included, as they were in the other two vignettes.

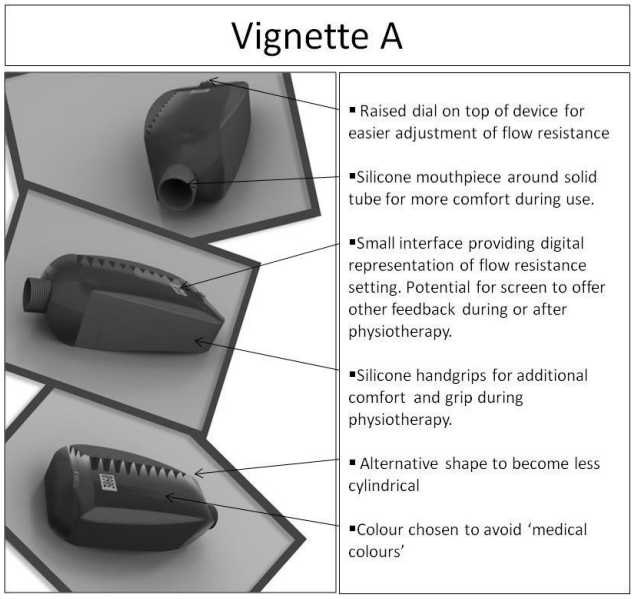

Figure 2 Vignette A – first design concept of the acapella® with annotations

2.2 Study implementation

Vignettes were presented to adolescents with CF during in-depth interviews; 20 participants took part in the study and were aged between 11-20 years.

Consideration of participant young ages, potential vulnerabilities and sensitivities were essential both in securing ethical approval and during interviews.

Interviews began with a brief introduction to the research project and study objectives. Participants were then asked to comment on the acapella® with reference to their own experiences, detailing positive and negative aspects of the device. Following this vignettes were introduced and details of modifications made to the acapella® were explained and questions were invited. Participants were informed that the acapella® concepts were based on information provided by healthy adolescent proxies. Participants were then encouraged to critique the concepts and to disclose positive and negative features of them. Participants were also encouraged to discuss their own preferences and ideas. Throughout this process participants were invited to illustrate their ideas on drawing boards. In the concluding stages of interviews participants were questioned about their involvement in the study and the efficacy of the vignettes.

2.3 Study outcomes

It became evident that the use of vignettes in interviews was a novel and stimulating addition to the study for participants and tended away from traditional studies that they are normally recruited for. None of the participants had ever been asked to comment on their medical devices and previous interview experiences hadn't used additional resources such as vignettes to support the interviewing process. General feedback regarding the use of vignettes was that they were a source of inspiration, provided a reference for discussion and made the interviews more interesting. Comments included:

"I might not have been able to say very much without these giving me ideas; it was nice to be asked".

"It just helps you think a bit more, otherwise you're just looking at the thing you use every day and it's hard to think about changing it".

"I think they were helpful; some of the ideas were ok and I didn't like a few but the pictures helped me to think about it".

The initial stages of interviews were quite limited at times and participants were reluctant to critique the acapella®. The introduction of vignettes stimulated the interviewing process and participants became more active in their evaluations of the device. They raised comparisons between the three acapella® concepts, and expressed their preferences between them and the original acapella®. The vignettes helped participants to focus on different features of the device and to consider their effectiveness of use and/or on personal satisfaction. They also expanded participant assessments of the acapella® from a personal perspective to consider environments of use and social acceptance, in line with changing lifestyles and new experiences as these users transition from child to adult.

With respect to practicalities of using vignettes there were limitations to their utilisation. This was due to limited desk space and displaying vignettes was not always possible. Where participants were asked to contribute their ideas using drawing boards difficulties arose due to room layouts, room ambience (interviews were conducted in hospitals) and confidence in drawing abilities. Though one participant, a college design student, found the creative nature of the study enthusing and became further involved in the research project after the study.

3 STUDY 2: THE EFFECTS OF DIFFERENT TYPES OF DIAGNOSTIC PROCEDURE AND INFORMATION PROVISION PREFERENCES

Exploring the effects of different types of diagnostic procedure and information provision preferences were the objectives of the second study. The study was designed with the intention of gaining a better understanding of user needs with respect to diagnostic procedures that may be encountered in clinical pathways and the role of information provision when encountering such procedures.

3.1 Study design and development

Vignettes were designed to create a diagnostic medical scenario where participants could engage with that scenario and reflect on it as if they were a patient. To create such a medical scenario required two attributes: 1) a symptomatic patient, and 2) a diagnostic procedure to investigate the cause of the patient's symptoms. A number of vignettes were conceptualised and the Map of Medicine (2012) was used to formulate the vignettes so that symptoms and diagnostic procedures were based on clinical evidence. Developed vignettes that were used in the study were based around three sets of condition based symptoms (coronary, gastroenterological and musculoskeletal) and three different types of diagnostic procedure (blood test, imaging procedure and invasive procedure). Using a factorial design nine vignettes were produced (3 × 3).The specific diagnostic procedures used in the nine vignettes are described in Table 1.

Table 1 Diagnostic procedures

	Blood test	**Imaging procedure**	**Invasive procedure**
Coronary	Blood test	X-ray	Endomyocardial biopsy
Gastroenterological	Blood test	CT scan	Colonoscopy
Musculoskeletal	Blood test	X-ray	Arthroscopy

Though the blood test type of diagnostic procedure is an invasive procedure it is relatively minimal and provided a basis in establishing findings in the other two types of diagnostic procedure as it is well-known and the same for each set of condition based symptoms. The vignettes were cross referenced against each other to ensure that they were consistently structured and the only variations in them were the generated systematic variation of symptoms and diagnostic procedures, the two independent variables. All other content maintained equivalent stature though phrasing of sentences was varied.

The vignettes were piloted, as was a questionnaire that was developed to obtain participant responses. The pilot of the vignettes and questionnaire provided valuable feedback and recommendations. This was an important process as responses from participants would be dependent on the comprehensiveness of the vignettes and their ability to remain focused on them and the questionnaire. This was to avoid satisficing from participants and Krosnick (1991) identified three conditions that contributed to satisficing: 1) task difficulty, 2) respondent ability, and 3) respondent motivation. Comprehensiveness and conciseness of the vignettes and the length of time it took to complete the questionnaire were important specifications in their designs, especially as participants were to complete three questionnaires in response to three vignettes.

3.2 Study implementation

72 participants from The University of Nottingham took part in the study and the majority were aged between 18-23 years. They were presented with one vignette at a time and encountered each set of condition based symptoms and type of diagnostic procedure only once. Vignettes were distributed in pre-set sequences in which all permutations were encountered uniformly by participants. 211 questionnaires were completed overall, which was five short of the maximum of 216. Participants were introduced to each vignette with the following statement:

'You are presented with a vignette about a patient who is experiencing a number of symptoms and has a test to further understand the reason for their symptoms. Imagine that you are that patient, experiencing those symptoms and that you are having a test to further understand the reason for your symptoms'.

The term 'vignette' has been used in this statement but this term was well understood before the start of the study as participants were informed of what a vignette was. The term 'test' is also used instead of 'diagnostic procedure' as it was regarded as more generic and therefore suitable for each vignette. Incidentally, the invasive procedure for the coronary based symptoms, endomyocardial biopsy, was replaced with 'heart biopsy' in keeping with the requirements of producing comprehensible vignettes.

Each vignette included a brief explanation about the diagnostic procedure that was being used to investigate the cause of the patient's symptoms, which included what the diagnostic procedure was and what it required in terms of patient

involvement (i.e. what happens to the patient during the diagnostic procedure). Images of the specific diagnostic procedures were also included.

Reading a vignette and completing a questionnaire took approximately 8 minutes, which was in conjunction with how long participants were informed their participation in the study would be. Participants were instructed that they could refer back to their vignette when completing a questionnaire and they could also ask questions if they needed any assistance in understanding the vignettes and questions in the questionnaire. As well as being of assistance, the study was carried out under supervision as another attempt to prevent satisficing.

The questionnaire included a combination of closed and open-ended questions in order to gain quantitative data for statistical analysis and qualitative data for thematic analysis respectively. The questionnaire was constituted by three fractions: 1) participant preferences for pre-diagnosis information, 2) participant perceptions of diagnostic procedures, and 3) participant preferences for post-diagnosis information. These were developed in response to the study objectives. Pre-diagnosis information refers to information that is provided to patients 'to inform them about their diagnostic options and to promote engagement with clinicians in the decision-making process', and post-diagnosis information refers to 'an outcome or result given to patients from an investigative procedure or test respectively' (Keane, Craven, and Sharples, 2011).

3.3 Study outcomes

The study produced interesting findings that met the objectives of the study. There was high regard for information provision in the pre-diagnosis stage and this was especially important to participants when responding to a vignette with an invasive procedure. This was demonstrated in findings for both statistical and thematic analysis. With respect to thematic analysis, themes that emerged included the *comprehensiveness of or requirement for information provision* about a diagnostic procedure, and *preparing* for possible clinical pathways in the event of a positive, negative or inconclusive result.

Perceptions about the different types of diagnostic procedure produced varied and intriguing results. There were high ratings for accuracies and confidence in the diagnostic procedures to further understand the reason for symptoms described in the vignettes. A major factor contributing to such high ratings was *trust* in clinicians and/or clinical practice, which was a major theme. There were also statistically significant effects of the type of diagnostic procedure on participants' level of apprehension, level of embarrassment and perceived likelihood of proceeding with a diagnostic procedure. These were all effects of the invasive procedures and were contributed by factors such as *physical involvement* and possible *sensations*, which were also major themes. Though there was a significant effect of the type of diagnostic procedure on participants' perceived likelihood of proceeding with a diagnostic procedure, ratings were high to proceed with all procedures and thematic analysis showed that this was because of a need to *understand and improve health*.

Information provision preferences in the post-diagnosis stage were as highly

regarded as they were in the pre-diagnosis stage. The majority of participants preferred to receive a detailed interpretation of a diagnostic procedure result and if it was possible to receive the result during or immediately after the diagnostic procedure. The use of new media, such as a mobile phone application, were explored to investigate whether participants would prefer to receive results through such a medium compared to traditional media, such as visiting a general practitioner or specialist clinician. Quantitative data resoundingly found a preference for traditional media and a major theme for such a preference was level of *detail* to be included in the result and the ability to ask questions.

4 VALIDITY OF VIGNETTES

Both studies benefited from the use of vignettes in engaging and eliciting valuable data from young demographics. With respect to the first study, vignettes provided a useful resource to support the interviewing process. They were an alternative approach to focus participant attention and to enable them to articulate their views and opinions. This was especially evident as maturity and competency levels vary considerably between ages 11-20 years and all participants were able to make a valid contribution. With respect to the second study, participant responses were true reflections of their perceptions and preferences rather than of past experiences. This does limit the generalisation of their responses, which Ogden, Daniells, and Barnett (2009) report of in a vignette study exploring choice in healthcare. However, it does provide an insight into user needs and expectations of potential patients. Of course, what has not been examined is the extent to which participant responses to the vignettes would be the same as their responses should they experience similar scenarios in the future. This is a trade-off, although this is a limit, as it avoids bias that may result from past experiences.

Design of vignettes and environments they are used in are important considerations in order for them to be fully utilised and to optimise participant responses. Vignettes in the first study did not have the same descriptive narrative as used in the second study as participants brought their own experiences of CF and user experience of the acapella® to the study. Annotations used in the vignettes were key in discussing the important modified features of the acapella®. These vignettes were constrained by the environment they were used in though and on some occasions the study conductor had to hold the vignettes on display to participants. This made conducting interviews difficult at times. In the second study, as participants were completing three questionnaires in response to three vignettes, it was important that the questionnaire and vignettes were appropriately designed and structured in order for participants to remain focus and avoid satisficing, and to obtain adequate and valid data. The use of open-ended questions in both studies was valuable as they encouraged participants to disclose reasoning for their responses and thus uphold them as ‘truth’, which is discussed by Torres (2009). Wilks (2004) also discusses the qualitative value of vignettes.

The number of vignettes in both studies was adequate and appropriate in order

for study objectives to be met. With respect to the second study, the factorial design used to produce nine vignettes and the distribution of them in pre-set sequences in which all permutations were encountered uniformly by participants meant that the independent variables were sufficiently explored.

Though vignettes in the first study were designed to engage young interviewees and to provide a foundation for them to create and/or expand on their views and opinions, they also provided a basis for demonstrating the purpose of the research project to clinicians. Clinicians gained a better understanding of medical device usage and adherence, and the effects of user needs on these. Parents of the adolescent participants were also encouraged by the use of vignettes.

The use of vignettes in the second study was appropriate due to its exploratory nature. A number of diagnostic procedures were investigated, which would have been difficult to achieve in real life considering ethical requirements needed. The time it would take and access to medical devices would also make it difficult.

5 CONCLUSIONS

Both studies involved young participants and the use of vignettes enabled research where they could make a valid contribution. The vignettes allowed participants to feel comfortable expressing their opinions and that they need not conform to impression-management biases (Alexander and Becker, 1978; and Torres, 2009). Vignettes as a methodology also compensated for participants' lack of product design and healthcare experience for study 1 and study 2 respectively, which Barter and Renold (2000) regard as one of the strengths of this methodology. Responses to vignettes are limited by their hypothetical nature, however, when appropriately designed and implemented they provide participants an opportunity to explore and contribute to research where they may otherwise be unable to, and thus are able to make a valid contribution to healthcare research.

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