

A process of measuring customer satisfaction in a service-centred environment using a postal survey questionnaire: A review of the methodology

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Abstract

The aim of this paper is to present a methodological process for measuring customer satisfaction in a service centred environment (in this case a physiotherapy treatment centre) using a postal survey questionnaire. Research issues such as reliability, validity and ethical considerations are discussed in detail. The construction and administration of the questionnaire are also discussed. In outlining this methodological process, it is hoped that more robust decisions can be made to inform practice.

Keywords: customer satisfaction, postal survey, questionnaire, methodology

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Introduction

Customer satisfaction is an important emergent concept in the dominant paradigm of a service centred environment and in particular, patient-centred healthcare (Law et al. 2006). The significance of measuring customer satisfaction lies in the fact that customers who are satisfied with their care are more likely to return. In a healthcare setting this means returning to complete their treatment and reporting a higher quality of life (Grahn et al. 1999), and less likely to initiate formal actions against the healthcare provider (Trumble et al. 2006).

Over the past decade, there has been numerous studies published on customer satisfaction with service centred environments, but to the author's knowledge no paper has focused on assisting researchers and clinicians with a methodological process to measure customer satisfaction using postal surveys. Therefore, the aim of this paper is to present the administration and governance of a using a post survey to measure customer satisfaction in a service centred environment, in this case a physiotherapy treatment centre.

This paper focuses on the research design, calculation of sample size, inclusion and exclusion criteria, construction of the questionnaire, issues with validity and reliability, procedure for questionnaire distribution, data collection, data analysis and ethical considerations will also be explored.

Research design

A postal survey method using a questionnaire with both open and closed ended questions was used in order to gather a unique perspective in understanding customer satisfaction following attendance at a service centred environment. The questionnaire was designed to measure five principles determinants of customer satisfaction, namely, expectations, communication, therapist, organisation, outcomes. The survey questionnaire was cross-sectional and retrospective in nature. Although postal surveys are most popular, it is important to note that with improved computer technology the mode of survey research can also be extended to include online surveys. However, when using this mode of survey research, it is important that the researcher ensures correct e-mail addresses are available and that potential respondents have a certain level of computer literacy (Case and Yang, 2009).

A postal survey is an appropriate method when dealing with many customers and allows every customer to get a standardised assessing tool to complete which may reduce bias in responses (Burns, 2000). They are usually easy to distribute and a cost-effective way of gaining broad information from several individuals, particularly from widespread geographical areas (Burns & Grove, 1987). This method allows for further follow-ups to continue until a feasible sample size is reached (Groves et al. 2009) and the researcher is available to assist with problems as they arise, although they remain in the background (Burns, 2000). In addition, anonymous prepaid return mailing can be used to ensure confidentiality with the expectation of encouraging a higher response rate (Flores-Macias & Lawson, 2008). This method also allows customers to complete the questionnaire in the privacy of their own home, thereby encouraging more open and honest answers (Webster et al. 2008). Such privacy is necessary to obtain information about deviant service provisions and embarrassing situations (Polit et al. 2001).

A cross-sectional, retrospective design was considered appropriate for this study as it is highly economical, external influences are limited and loss of respondents are minimised (Saunders *et al* 2007; Treece & Treece, 1986). A cross-sectional design provides a snapshot of the outcome and the characteristics associated with it, at a specific point in time, which is useful when planning health services (Petrie et al. 2002). A retrospective design allows for the easy identification of cohorts of relevant customers. It looks backwards and examines

characteristics or suspected characteristics in relation to research questions that was established at the start of the study (Polit & Hungler, 1987). Efficient retrospective designs are useful for defining natural history because they can be used with readily available data to monitor performance measures across demographic groups, geographic areas and time periods. Such performance measures are key elements to enhance the quality of service provision (Earle & Ayanian, 2006).

Sample size

All customers referred to the service centred environment and in particular during a twelve month retrospective period were identified using the Cohort database system and selected if they met the stipulated inclusion criteria. Decisions on sample sizes should be guided by the methods of analysis to be used on the data (Sekaran, 2003). As a guide, Sekaran (2003) stated that a sample size larger than 30 and less than 500 is appropriate for most questionnaire research. However, in order to get a robust sample size, a power analysis was performed based on a 5% significance level, a power of 80%, an effect size of 0.8 and an anticipated non-response rate of 30% (Comrey, 1973; Hills & Kitchen, 2007). A sample size of 214 was considered adequate.

Inclusion and exclusion criteria

Customers were included if they had at least one attendance at the service centred environment. Customers were excluded if (a) they were unwilling or unable, for any reason, to give their written consent and (b) those whose treatment had medico-legal implications.

Construction of the questionnaire

The questionnaire was adapted from previous studies focusing on the expectations disconfirmation model with overall satisfaction (Harding & Taylor, 2010; Hills & Kitchen, 2007; Knight et al. 2010; Metcalfe & Moffett, 2005; Rogers et al. 1993). The questionnaire was prepared in English and provision was made for the translation of the questionnaire into another language if English was not the preferred language. The translation process involved forward and backwards translations followed by synthesising the translations into a single final questionnaire by two native speaking experts of the target language (Breugelmans, 2009). Customers were advised to contact the author or the supervisor for further information.

The construction of the questionnaire was largely guided by the Likert scale. The reliability of such a scale tends to be high because of the greater range of answers permitted to customers (Goldstein et al. 2000). Most studies are not conclusive on the difference between 5 and 7 points on a scale, but suggest that reliability increases when more points are added to the scale (Alwin and Krosnick, 1991). This scale was based on five points, ranging from "Strongly agree" to "Strongly disagree". A five point scale is often the most commonly used scale as it cuts down on potential confusion and fatigue (Alwin and Krosnick, 1991). A neutral point "Unsure" was included to avoid forcing customers to express a view towards certain items and minimise the problem referred to as socially desirable answers (Oppenheim, 1992). Statements were worded in a positive and negative direction and then distributed randomly to rule out the possibility of automatic agreement (Gillham, 2000).

Validity

Validity refers to the degree to which an instrument accurately measures what it was intended to measure (Saunders et al. 2007). Face validity was established as the questionnaire was based on the relevant literature pertaining to customer satisfaction with service centred environments. Content validity was checked at a meeting with five experts in research and public health. Experts were those with postgraduate qualifications and a track record of published scientific papers.

Factor analysis

A confirmatory factor analysis (CFA) was conducted to examine the consistency of factors and to identify the strength of the tool. CFA is used to verify *the underlying dimensions of the survey (factors) and the pattern of item-factor relationships (factor loadings)* (Brown, 2006, p. 2). It assists in the determination of the construct validity and scoring of the survey and subscales. Goodness of fit for the CFA was evaluated by the root mean square error of approximation (RMSEA) statistic, which is the most commonly used index (Ullman, 1996). The RMSEA estimates the lack of fit of a model, and an RMSEA of 0.06 or less indicates a good-fitting model and a value greater than 0.10 is indicative of a poor model fit (Hu and Bentler, 1999). The CFA analysis was performed using the statistical program of AMOS 17.0. The analysis showed the appropriateness for measuring customer satisfaction was good (RMSEA = 0.058).

Reliability

Reliability is a measure of the degree of consistency or accuracy with which an instrument measures the attributes it is designed to measure (Carlson and Heth, 2010). The intra-class correlation coefficient (ICC) was calculated using the test retest method in order to evaluate the reliability of the results. The test retest reliability measures stability over time, by administering the same the test to the same subjects at two different points in time (Shakil et al. 2011). A group of ten customers were randomly selected to complete the questionnaire on two different occasions administered one week apart. Customers were selected at random to maximise the probability that those who received the questionnaire were representative of the entire study population (Mazor et al. 2002). The time allowed between completing the questionnaires was considered long enough to prevent the inflation of reliability estimates by recall (Rankin and Stokes, 1998) and short enough to minimise changes in their clinical status (Mousavi et al. 2007). An ICC value of 0.00 indicates no reliability, 0.75 and greater was defined as good reliability and 1.00 as perfect (Portney & Watkins, 2000).

The Cronbach's alpha is a co-efficient of reliability and is used to estimate the measure of internal consistency between different items (Allen and Yen, 2002). This statistic calculates how well a set of variables correlate with one another in a single one-dimensional latent construct (Cortina, 1993). Cronbach's alpha was calculated utilising responses from questions scored on the five-point Likert scale. An alpha value of 0.70 indicates moderate internal consistency, 0.80 indicates strong internally consistency and 0.90 are considered excellent (Nunnally & Bernstein, 1994). This study found good levels of reliability with an alpha of 0.8.

The questionnaire was piloted in order to improve clarity and refine its contents and to ensure that the layout was professionally structured. The amendments following the pilot study included minor wording and typographical changes and simplification of some questions. These changes were then incorporated into the final questionnaire in order to ease readability and reduce the time required for completion.

Procedure for distribution of the information letter and questionnaire

The information letter and questionnaire together with a stamped return envelope was posted to all eligible customers. Freepost return envelopes were used to minimise the financial cost associated with returning the questionnaire (Flores-Macias & Lawson, 2008). The return envelopes were marked confidential and for the attention of the author to ensure that answers were not constrained by a fear that any future involvement with the service centred environment could be compromised (Webster et al. 2008). Following the pilot study, it was estimated that the completion time for the questionnaire would be between 20-25

minutes. According to Neuman (1997) there is no proper length of a questionnaire as the length depends on the questionnaire format and the respondents' characteristics.

Data collection

Customers were requested to complete and sign the questionnaire and return them within four weeks of receipt. Only those questionnaires with a signed information sheet were accepted and included in the data analysis. All returned questionnaires were numerically coded to maintain anonymity.

Reminder letters were sent to all customers four weeks after initial mailing, thanking them if they returned the questionnaire and asking them to complete and return it if they had not (Dillman, 2007). The author included his contact details on both the information and reminder letters and customers were encouraged to contact him if they required further information. The author also included the name and contact details of the supervisor who could be contacted independently. This was done to ensure that customers who felt reluctant to contact the author directly, for any reason, could contact the supervisor instead.

Data analysis

The quantitative data elicited from the questionnaire was analysed using the Statistical Package for the Social Sciences. Descriptive statistics were used to analyse customer demographics, mean satisfaction scores and overall satisfaction scores. Pearson's correlation coefficients were used to examine the strength and direction of the relationship between the five principle determinants of customer satisfaction prior to conducting regression analysis. This was done as strong correlations may adversely affect the regression analysis due to the effects of collinearity. The computed coefficients vary between -1 and +1 with either extreme indicating a perfect relationship, negative or positively, between the two variables respectively. The complete absence of a relationship would result in a coefficient of zero. A coefficient of 0.7 was considered a moderately strong correlation and 0.8 was considered strong (Hair et al. 2000). Stepwise regression analysis was used to determine the determinants that predict customer satisfaction. A p-value of 0.05 was considered statistically significant. Stepwise analysis is acceptable for prediction purposes only and where the variables are strongly correlated. It is important to note that leaving all variables in the regression model or using expert judgement to identify relevant variables stepwise regression analysis may introduce bias (Flom and Cassell, 2007).

All data obtained through the open-ended question was reviewed and categorised into (a) positive responses, which included those customers who perceived that the service centred environment met or exceeded their expectations and reported a positive evaluation of their care; (b) negative responses, which included those customers who perceived that the service centred environment had not met their expectations and reported a negative evaluation of their care and (c) neutral responses, which included those customers who reported some benefit from attending the service centred environment, but with residual problems after discharge (Hills & Kitchen, 2007).

Ethical considerations

All research should always contain statements of ethical considerations as research that is scientifically unsound can never be ethical (Jelsma & Clow, 2005; Neuman, 1997). The University Research Ethics Committee Code of Practice for Research involving Human Participants, the NHS Clinical Governance Framework for Health and Social Science, Second Edition and the Chartered Society of Physiotherapy Core Standards of Physiotherapy Practice were used to guide the research process. The ethical principles of beneficence, non-maleficence, autonomy and justice were upheld at all times during the course of this study, under active supervision.

Ethical approval to conduct this research study involving human participants was granted from two organisations, namely, the local NHS Authority Research Ethics Committee and the University Research Ethics Committee. After handing in the initial research protocol, any amendments that were suggested by either of these committees were made and following these changes the revised protocol was resubmitted until approval was gained.

The Ethics Research Committees of both organisations must be informed, in advance, of any adverse or untoward events or any significant proposed deviation from the initial research protocol. An update report must be sent to the Ethics Committees once the research is underway if there are any results or events that raise questions about the safety of the research. An incident form must also be completed and submitted in accordance with the organisations' adverse events procedures.

Conclusion

This paper has provided a robust methodological process for measuring customer satisfaction in a service centred environment and in this particular case a physiotherapy treatment centre. Critical issues such as validity, reliability and ethical considerations for the use of postal surveys have been clearly addressed.

It is hoped that this methodological process will provide a framework to improve the collection of data which could be used to implement change within service centred environments. It may also assist researchers, particularly student researchers, in designing their methodological approaches. In conclusion, this methodological process is likely to provide a standardised approach to measure customer satisfaction which will assist both researchers and clinicians not only to make informed decisions, but also to compare collated data across different service centred environments.

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