



A systematic review of the relationship factor between women and health professionals within the multivariate analysis of maternal satisfaction



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ABSTRACT

Introduction: personalised support provided to women by health professionals is one of the prime factors attaining women's satisfaction during pregnancy and childbirth. However the multifactorial nature of 'satisfaction' makes difficult to assess it. Statistical multivariate analysis may be an effective technique to obtain in depth quantitative evidence of the importance of this factor and its interaction with the other factors involved. This technique allows us to estimate the importance of overall satisfaction in its context and suggest actions for healthcare services.

Methods: systematic review of studies that quantitatively measure the personal relationship between women and healthcare professionals (gynecologists, obstetricians, nurse, midwives, etc.) regarding maternity care satisfaction. The literature search focused on studies carried out between 1970 and 2014 that used multivariate analyses and included the woman-caregiver relationship as a factor of their analysis. **Results:** twenty-four studies which applied various multivariate analysis tools to different periods of maternity care (antenatal, perinatal, post partum) were selected. The studies included discrete scale scores and questionnaires from women with low-risk pregnancies. The "personal relationship" factor appeared under various names: care received, personalised treatment, professional support, amongst others. The most common multivariate techniques used to assess the percentage of variance explained and the odds ratio of each factor were principal component analysis and logistic regression.

Discussion: the data, variables and factor analysis suggest that continuous, personalised care provided by the usual midwife and delivered within a family or a specialised setting, generates the highest level of satisfaction. In addition, these factors foster the woman's psychological and physiological recovery, often surpassing clinical action (e.g. medicalization and hospital organization) and/or physiological determinants (e.g. pain, pathologies, etc.).

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Introduction

Rationale

Maternity satisfaction in the antenatal, perinatal and post-partum periods seems to be of a multifactorial nature. Much research has been dedicated to assess which factors are the most determinant and define it. Studies carried out by [Waldenström](#)

[et al. \(2000\)](#), [Hodnett \(2002\)](#), and [Harvey et al. \(2002\)](#) in various countries, including the UK, Australia, Canada and Sweden amongst others, showed that continuous support from caregivers, a close relationship with them and a warm atmosphere in the maternity centres are factors that lead women to gather more information, take greater participation in decision-making, have lesser likelihood of analgesia need and attain greater overall satisfaction. These factors have been defined with greater depth through accurate qualitative and quantitative analysis using more precise, contrasted and validated questionnaires and scales designed to measure the perception of health for different setting and applied to midwifery and maternity fields ([McDowell, 2006](#)).

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Literature reviews, non-quantitative evaluations based on questionnaires following the Delphi methodology and open-ended interviews delivered to professional caregivers, have identified woman-centred support and communication essential factors to ensure the quality of maternity care (Hildingsson and Thomas, 2007; Devane et al., 2007; Yeh and Nagel, 2010; De Bruin-Kooistra et al., 2012). In addition, specific scales and predictors aiming at the highest psychometric quality to measure overall maternity care satisfaction identified other features that also shape it: presence of the midwife, place of birth, woman-caregiver empathy, amount and quality of the information received, feeling in control over the situation, amongst others. Their outcome was based on the percentage distribution of the responses in the scales used in the studies (Biró et al., 2003; Goodman et al., 2004; Christiaens and Bracke, 2007; Wieggers, 2009; Stevens et al., 2011a; Sawyer et al., 2013). Other studies have attempted to quantify these same issues using factor analysis and other multivariate statistical tools (De Vet et al., 2005) and provided discerning elements of diagnostic and prognostic value for decision-making in healthcare systems design. As Hodnett notes: “Since childbearing is the most common reason for accessing health services, assessments of women’s satisfaction with their care during labour and birth are relevant to healthcare providers, administrators, and policy makers” (Hodnett, 2002, p. 160).

In summary, there is qualitative and quantitative evidence that suggests that the factors linked to the woman-caregiver relationship hold considerable weight in shaping her satisfaction. Thus, the identification of specific factors of this relationship, the association between them and their quantitative relevance to the perception of satisfaction is of great interest. We carried out a systematic literature review according to the PRISMA statement using multivariate statistical analyses to evaluate the woman-health professional relationship, assess satisfaction and provide precise knowledge of “the personal relationship” factor in healthcare.

Objectives

We aimed to answer the following four questions:

- Are multivariate analysis methods quantitatively applied to maternal care satisfaction efficient to assess and compare the relevance of each factor within each study and between them?
- Which are the main factors that convey maternal satisfaction?
- Which factor is the most determinant one towards overall satisfaction? Is the “woman-healthcare professional personal relationship” an intrinsic feature of this factor?
- Which actions could be suggested and how may be implemented (if any)?

Methods

Information sources

The search was performed in the Web of Science, Medline, Cinahl, PsychInfo, and Scopus databases and included articles published between January 1970 and December 2014. Additional citations from other sources (e.g. references found in articles and Cochrane reviews) were also examined.

The search involved tracking all multivariate analysis techniques (Rencher, 2002), including those not generally used for satisfaction studies such as multidimensional scaling, log-linear models, conjoint analysis, canonical correlation analysis, survival analysis.

The search strategy in each database included Boolean

operators as follows: (satisfaction OR perception) AND (childbirth OR pregnancy OR post partum) AND (“structural equation” OR “principal component” OR “logistic regression” OR “factor analysis” OR “cluster analysis” OR “multidimensional scaling” OR “log-linear models” OR “correspondence analysis” OR “conjoint analysis” OR “discriminant analysis” OR “canonical correlation analysis” OR “manova” OR “survival analysis”) AND (“1970/01/01”[PDat]: “2014/12/31”[PDat]).

Eligibility criteria

The articles published between 1970 and 2014 that performed a multifactorial analysis of satisfaction and the factors associated to it were eligible inclusion in the analysis if they met the following three criteria simultaneously:

- Use of scales or questionnaires with high internal consistency (Cronbach’s α over 0.70) to directly evaluate maternal satisfaction.
- Use of a validated multivariate analysis with a sample size greater than 100 (Kline, 1993) and a response rate higher than 50% (Baxter and Babbie, 2004).
- Inclusion of an analysis of factors related to the woman-caregiver personal relationship.

Study selection

The literature search based on their title or abstract content identified studies which included data scales, questionnaires or indicators of satisfaction for a certain period of the maternity stage, and used a Likert scale or a similar scale to quantify the responses. The studies that processed this information using various types of multivariate analyses were selected based on the eligibility criteria. This allowed identifying variables related to satisfaction and factors explaining the highest degree of satisfaction. Once these variables and factors had been obtained, we selected studies that (1) directly addressed the woman-caregiver relation (e.g. providing comprehensive information, presence of a midwife, individualised care, empathetic relationship and continuity of assistance) and (2) studies that were also indirectly related to the woman-caregiver personal relationship may also determine satisfaction (e.g. home setting, feeling in control and fulfilment of expectations). Two reviewers (IM and IS) screened independently the citations and evaluated the studies selected.

Data collection

The information extracted from the selected studies included: population sample size (n), response rate (%), type of scale used, number of items, internal consistency (Cronbach’s α) and type of multivariate analysis used. The variables and factors resulting from the multivariate analysis of the study were evaluated. If the studies used factorial analysis or logistic regression, then the % of explained variance for each factor or the odds ratio (OR) of each variable were also included.

After evaluation of the statistical parameters, a specific meaning of the variables according to the intended meaning of the study’s authors was established. No other procedure was performed to assess the factors or to develop an automatic data extraction procedure.

Synthesis of results

Once the factors and variables of interest had been extracted using different multivariate methods, their relevance and meaning were assessed within each study. This assessment included the

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