



**ORIGINAL RESEARCH PAPER**

**Anatomy**

**PREDICTORS OF SATISFACTION WITH CHILDBIRTH AMONG NON-RELIGIOUS JEWISH MOTHERS IN PUBLIC HOSPITALS**

**KEY WORDS:** Obstetric care, Childbirth satisfaction, NRJM, Personal Interaction, Surrounding Atmosphere, Technical Methods.

**Dr. Iris Gertner Moryossef**

Researcher and a lecture Hadassah Academic College Jerusalem Israel.

**Dr. Keren Or Chen\***

Researcher and senior lecture Haifa University Israel.\*Corresponding Author

**ABSTRACT**

**Background:** The wellbeing of a mother after giving birth and the relationship she forms with the infant are often affected by her experience in the delivery room. A higher level of satisfaction with the childbirth experience contributes to a positive relationship with the baby after delivery. **Aim:** The aim of the study is to determine the dimensions that affect the level of satisfaction of non-religious Jewish mothers (NRJM) with delivery services in public hospitals in Israel, and to find out which dimension has the greatest influence. **Design:** Close ended online questionnaires. **Setting:** Public hospitals in Israel. **Sample:** A random sample of 232 women who gave birth within a period of 12 months prior to the study participated in this study. The age of participants ranged between 18-39, their level of income and education varied and they had up to five previous childbirths. **Procedure:** The study was conducted in July-September 2020 in public clinics for infant healthcare named Tippiat Halav. In the first phase we identified 18 items that affect women's satisfaction with delivery services. Using Exploratory Factor Analysis (EFA) performed by PCA, we classified the items into three domains – Personal Care, Surrounding Atmosphere and Technical Methods (Cronbach's >.82). In the second phase we employed close ended questionnaires to rank participants' satisfaction with each dimension on a 1-5 Likert scale. Each participant completed the questionnaire by herself within 5-10 minutes. Two-hundred and thirty-two questionnaires were completed. **Results:** Linear regression shows that the dimensions of Personal Care(interaction and professionalism of the staff ) as well as Technical Methods ( presence of medical equipment in the room), booth significantly influence NRJM satisfaction Surrounding Atmosphere is not a significant predictor of satisfaction. Positive correlation was found between NRJM's satisfaction obstetric care and their level of education, and negative correlation was found with their age. No correlation was found between the level of satisfaction and income. **Conclusions:** The results emphasize the importance of the importance of the personal interaction and technical equipment in the delivery room. The more satisfied a woman is with these two dimensions, the more likely she is to be satisfied with her overall birth care. Hospitals should therefore increase the interaction of the staff with the mother and improve the safety she is feeling in the room. Younger and more educated women are more likely to appreciate the level of Personal Care and be satisfied with it compared to older and less educated women.

**INTRODUCTION**

More than 195,000 births occurred in Israel in 2019, 65% of which in the secular Jewish sector. The overall fertility rate (i.e., the average number of children per woman) in this population? is 3.11, which is higher than the birthrate in all OECD countries. The average age of a woman at childbirth is 27.6 (<https://www.cbs.gov.il/EN/Pages/default.aspx>).

Israeli law permits home deliveries; yet the official policy of the Ministry of Health is that the best place for childbirth is the hospital. This policy is implemented through negative monetary incentives to women who give birth at home; only a hospital delivery, or admittance to a hospital less than 24 hours post home delivery, entitle a woman to a maternity allowance paid by Social Security ([https://fs.knesset.gov.il/globaldocs/MMM/854d6b58-e9f7-e411-80c8-00155d010977/2\\_854d6b58-e9f7-e411-80c8-00155d010977\\_11\\_8555.pdf](https://fs.knesset.gov.il/globaldocs/MMM/854d6b58-e9f7-e411-80c8-00155d010977/2_854d6b58-e9f7-e411-80c8-00155d010977_11_8555.pdf)).

This policy, in addition to the common knowledge that Israel has an advanced public health system, result in over 99% percent of hospital deliveries in the country.

Non-religious Jewish mothers (NRJM) in Israel treat pregnancy seriously and take multiple pregnancy tests, including some that are private and costly, for careful prenatal care. On average, a pregnant Israeli woman undergoes 18 tests and invests over \$7,000 in tests, childbirth courses, literature, nutrition, clothing, and other pregnancy-related expenses. This special journey culminates with the labor itself. The woman's satisfaction with the labor experience is determined by multiple parameters that include interpersonal attention with staff, physical conditions, delivery room hygiene, emergency equipment, staff accessibility, and more (Jafari & Mohebbi, 2017; Goodman,

Mackey & Tavakoli ,2004; Jackson, Chamberlin & Kroenke, 2001).

The level of satisfaction of the mother during childbirth has a major effect on her wellbeing and interaction with the baby after birth (Harvey, Rach, Stainton, Jarrell & Brant, 2002; Fair & Morrison, 2012, Green, Coupland & Kitzinger, 1990). The Donabedian model (Donabedian, 1997, pp. 1145-1150; 1988, p. 260) defines three components that determine the level of maternal satisfaction: "Process" denotes activities that are classified as treatment, diagnosis, habitation, and preventive care; "Structure" refers to static characteristics of the care, including human resources, information systems, physical equipment and facilities; and "Outcome" relates to the patient's health status, wellbeing and satisfaction.

Another model is the Mackey Childbirth Satisfaction Rating Scale (MCSRS), which was designed by Mackey and Goodman by identifying the elements that affect childbirth satisfaction using a scale with 34 items. The scale consists of six sub-dimensions: satisfaction with "self" includes decision making; satisfaction with "nurse" relates to involvement in decision making; satisfaction with the "partner" refers to how the patient's companion is treated; satisfaction with the "baby" relates to the amount of time the baby stays with the mother; satisfaction with "physician status" refers to technical and professional knowledge of the staff; and "overall satisfaction" relates to the overall labor experience (Goodman, Mackey & Tavakoli, 2004; Moudi & Tavousi, 2016; Bryanton, Gagnon, Johnston & Hatem, 2008). Three central dimensions are found in most of the studies: the Personal Care between the service provider and the patient – especially expressions of empathy, attention, professionalism, and kindness of the service provider; the Surrounding Atmosphere in the room, which includes privacy, staff accessibility and room sanitation; and the Technical Methods

itself, which involves the availability of emergency equipment, alternative methods and anesthesia services. This study examines these three central components, which together determine the level of childbirth satisfaction among women in labor.

**Materials and Methods**

**Methods**

The study was conducted in healthcare centers in Israel called *Tippat Halav*, which are public clinics that provide overall infant healthcare, including weight measurement, vaccination, and nutrition guidance. The research was conducted in two steps, described in Table 1.

**Phase one: Qualitative research: focus group**

In the first phase of the research we conducted group interviews in seven focus groups, each including nine to ten non-religious women who had given birth during the last year. At this phase we identified 18 items that affected their satisfaction with the childbirth experience.

**Phase two: Quantitative research: close ended questionnaires**

In the second phase we used close ended questionnaires based on the Donabedian quality assessment framework (Donabedian 2005, p.83) for measuring women's satisfaction with their obstetric care (Goodman and Witztum, 2005; Goodman, Mackey & Tavakoli, 2004; Green, Coupland & Kitzinger, 1990). Each questionnaire contained 18 items, which were rated on a 5-point Likert scale (1 - very dissatisfied, 2 - dissatisfied, 3 - neutral, 4 - satisfied, and 5 - very satisfied). Each participant received a questionnaire and responded to it within 5-10 minutes.

A total of 232 questionnaires were obtained in July-September 2020. They covered sociodemographic variables including age, income, number of pregnancies and level of education. The results are described in Table 2.

**Table 1: The research phases**



Step	Purpose	Number of participants
Qualitative interview	Identifying the items that significantly influence women's evaluation of obstetric care services.	65 NRJM
Quantitative questionnaire	Ranking the effect of significant items on the evaluation.	232 NRJM
Quantitative questionnaire	Classifying the items into three dimensions (Surrounding Atmosphere, Personal Care and Technical Methods).	232 NRJM
Quantitative questionnaire	Identifying correlations between these dimensions and sociodemographic variables.	232 NRJM
Quantitative questionnaire	Determining predictors of mothers' satisfaction.	232 NRJM

**Table 2: Socio-demographic characteristics of NRJM (N = 232)**

	Variables	%	N
Age	18-24	10.2	5
	25-34	24.5	12
	35-42	20.4	10
Education	Low level of education (high school)	22.4	11
	High level of education (BA or higher)	22.4	11

Primiparity	Nulliparous (mother for the first time)	18.4	9
	Parous (1-4 children at home)	81.6	40
	Multiparous (has more than 4 children)	92	46
Income	Lower than average	2	1
	Average	6	3
	Higher than average	25.4	41

**Measures:**

NRJM's satisfaction with each item was measured using closed ended questionnaires adopted from the Donabedian quality assessment framework (Donabedian, 2005, pp. 691-729). We used a 5-point Likert scale (1 - very dissatisfied, 2 - dissatisfied, 3 - neutral, 4 - satisfied, and 5 - very satisfied).

An exploratory factor analysis (EFA) was performed by principal component analysis (PCA) with varimax rotation (Pantouvakis, 2010; Donabedian, 1980, p.215) to classify the items into three dimensions (Cronbach's 0.81-0.83) as shown in Table 3: Personal Care (which explained 30% of the satisfaction variance), Surrounding Atmosphere (which accounted for 20% of the satisfaction variance) and Technical Methods (which accounted for 12% of the variance).

Data analysis was performed using Statistical Package for the Social Sciences (SPSS). The association between NRJM satisfaction and each of the components was examined by Varimax rotation, and stepwise multiple regressions were performed to identify the significant predictors of the three satisfaction dimensions. Using Spearman's rank correlation coefficient, we measured the association between sociodemographic variables and satisfaction with each item, and linear multiple regression was used to determine the main predictors of satisfaction. An adjusted odds ratio was used to determine the level of association between selected variables, and variables having \*p<0.05 were retained for the model.

**Table 3: Exploratory factor analysis of the three dimensions**

Dimension and items	Cronbach's $\alpha$
[1] Technical Methods 1. A large and skilled staff delivers the baby. 2. There is constant presence of doctors and medical staff. 3. There is emergency labor equipment. 4. There is equipment for alternative medical procedures.	0.81
[2] Surrounding Atmosphere 5. The environment is clean and esthetic. 6. The room has a positive and calm ambience. 7. The mother has privacy in the room. 8. Organization teamwork and interaction.	0.82
[3] Personal Care 9. The nurses and midwives are professional and knowledgeable. 10. The staff is responsive and attends to the mother's wishes. 11. Professional training and knowledge of the nurses and midwives 12. Quality of the service and treatment 13. Consulting with the mother before intervening 14. Information is provided to the mother during procedures. 15. The nurses and midwives are empathic and considerate. . 16. The staff is ready to fulfill special requests (private doula, music). 17. The staff truly cares about the mother's feelings and needs.	0.81

**RESULTS**

Linear multiple regression was conducted to identify the

dimensions that predict mothers' satisfaction (Table 4). The linear regression explained 89% of the satisfaction variance ( $F(3,46) = 110.67, p < 0.001$ ).

The dimensions of Personal Care contains interaction and professional of the staff and Technical Methods contains existence of equipment had high correlation with NRJM's average satisfaction ( $\beta = 0.62; 0.45$ ), whereas the dimension of Surrounding Atmosphere had no significant correlation with it ( $\beta = .10$ ).

**Table 4: Linear multiple regression of satisfaction dimensions**

t	Beta	Std. Error	B	Dimension
12.64**	.57	.04	.57	Personal Care
9.37**	.45	.02	.36	Technical Methods
1.13	0.1	0.1	0.17	Surrounding Atmosphere

\* $p < 0.05$  \*\* $p < 0.01$

The regression analysis was found to be significant [ $F(6.41) = 54.76, p < 0.001$ ], explaining 91% of the satisfaction variance. As seen in Table 5, demographic variables (age, income, education, and previous childbirths) were not found to be significant predictors of NRJM satisfaction ( $\beta = -.05$ ).

As seen in the results, the dimensions of Personal Care and Technical Methods are the main predictors of NRJM satisfaction ( $\beta = .62; 8.38$ ). Based on linear regression, the dimension of Surrounding Atmosphere does not predict NRJM satisfaction ( $\beta = .1.12$ )

**Table 5 Linear multiple regression of factors that affect mothers' satisfaction**

t	Beta	Std. Error	B	Dimension
10.46**	.48	.004	0.62	
8.38**	0.35	0.03	0.35	Technical Methods
1.12	0.12	0.05	0.17	Surrounding Atmosphere
-1.42	-0.13	0.01	.0.12	Age when giving birth
-1.32	0.24	0.06	0.24	Education
-.67	-0.21	0.05	0.21	Income
-.6	-0.12	.0.06	0.23	Previous childbirths

Results from Spearman on the correlation between participants' demographic variables and their satisfaction with all three dimensions (Table 6) reveal significant positive correlations between participants' level of education and the dimensions of Personal Care as well as significant negative correlation between mother's age and dimension of Personal Care.

No significant correlations were found between previous childbirths or income and satisfaction. In addition, no significant correlation was found between the dimension of Surrounding Atmosphere and Technical Methods (\* $p < 0.05$  \*\* $p < 0.01$ ).

**Table 6: Correlation between dimensions of satisfaction and demographic variables**

Dimension	Age	Education	Income	Previous childbirths
Personal Care	-0.24*	0.41**	0.12	-0.13
Technical Methods	-0.15	-0.11	0.03	0.06
Surrounding Atmosphere	0.02	0.09	0.06	-0.11
Mean satisfaction	--0.09	-0.24*	0.10	-0.07

\* $p < 0.05$  \*\* $p < 0.01$

**DISCUSSION**

The satisfaction of women during childbirth is known to affect their post-partum wellbeing and have thus been studied in previous research (Srivastava, Avan, Rajbangshi & Bhattacharyya, 2015; Bryanton et al., 2008; Goodman et al.,

2004). The correlations between patients' satisfaction and the dimensions of Personal Care, Physical Surrounding and Process have been demonstrated in a variety of related models.

Donabedian's framework (1977, 1980) focused on the structure outcome, while Mackey's MCSRS model (Goodman et al., 2004) focused on the Personal Care. The Customer Satisfaction Questionnaire (CSQ, Attkisson & Greenfield, 1994; Moudi & Tavousi, 2016) highlighted the service provider and the process abilities.

The current study lends support to the claim that Personal Care – which involves interaction with the service provider, receiving information, attentiveness, empathy, and consultation with the patient – alongside the Technical Methods, which include the presence of medical personnel as well as emergency and alternative care equipment – are both important components that influence women's satisfaction with their labor experience (Christians, Van De Velde & Bracke, 2011; Tayelgn, Zegeye & Kebede, 2011; Christiaens & Bracke, 2011; Tadesse, Bayou & Nebeb, 2017; Bramadat & Driedger, 1993).

In contrast to these reported results, our findings show that the Surrounding Atmosphere dimension – which includes the maintenance of the delivery room, its cleanliness and the teamwork in it – does not influence NRJM's satisfaction. According to our research, elements related to the delivery room have a smaller effect on the non-religious mother's level of satisfaction compared to elements related to the personal interaction with the care provider and the medical equipment. These findings contrast with those of other studies, which have shown the cleanliness of the delivery room and the presence of the medical staff to be significant factors in the mother's overall satisfaction (Srivastava & Ara dhant, 2015; Galassi, Schanberg & Ware, 1992; Lucas, 2003).

These results may reflect the fact that public health in Israel is considered professional and advanced (the rate of death during birth, for example, is 0.003% as opposed to 0.06 in the OECD). Hospital birth is encouraged in Israel over home delivery (Israel has less than 1% home births as opposed to 30% in Europe), and the fertility rate in Israel is two times that of the OECD (3.1 compared to 1.8 children per woman, with less than 6% of the population having no children). Since the Israeli Ministry of Health grants \$3,000 to hospitals for each delivery, hospitals encourage women to give birth at their facilities and are very service focused. As a result, all service providers are well trained to fulfill the women's needs. Most women choose to give birth at public hospitals where privacy conditions are lacking. Yet they expect safe medical procedures and warm personal treatment. The importance of the human dimension, alongside the technical dimension, is probably due to the fact that Israel has one of the most advanced healthcare systems in the Western world, therefore the mother expects the professionalism of the staff and the medical equipment to be of the highest quality. The Israeli rate of physicians in the population is 3.49 doctors per 1,000 persons, a rate approximately 13% higher than the average in OECD countries, which is 3.10 physicians per 1,000 persons (Israeli Medical Association, October 2020).

For these reasons, the surrounding atmosphere, including the patient's privacy, have little effect on the childbirth experience. This is in contrast to the salient effect of the service providers and the medical facilities, which are reflected in items such as the caregivers' professionalism and the interaction with them (i.e., the Personal Care dimension), or the availability of emergency and alternative care equipment (the dimension of Technical Methods) ([http://taubcenter.org.il/wp-content/files\\_mf/fertilityratesh eb.pdf](http://taubcenter.org.il/wp-content/files_mf/fertilityratesh eb.pdf)).

Comparing our findings to those of other studies reinforces a positive correlation between age, income, and other demographic variables and delivery satisfaction (Melese, Gebrehiwot, Bisetegna & Habte, 2014; Srivastava et al., 2015; Goodman et al., 2004). Our research shows that Personal Care correlates positively with education and negatively with age. In other words, younger and more educated mothers are more likely to be satisfied with the dimension of Personal Care. However, no significant correlation was found between the dimension of Personal Care and other variables (income, previous childbirths). In addition, no significant correlation was found between age, income, education, and previous childbirths and the other two dimensions (Technical Methods or Surrounding Atmosphere).

These findings suggest that because younger women (who may be giving birth for the first time) are less confident, they may ascribe more importance to the interaction with the medical staff and the ability to ask questions and be given comprehensive information. This is also true of educated women, who understand the complexity of childbirth and its potential risks, thereby emphasizing the need to communicate with the caregivers. Older and less educated women, on the other hand, may be less forgiving towards the medical staff, thus are less likely to be satisfied with it. This conclusion can find support in other studies (Ajayi, 2019; Lumadi & Buch, 2011), which have shown that older and less educated women are less patient with regards to childbirth and have higher expectations for staff attention, thus tend to be less satisfied with the dimension of interpersonal communication.

As for Technical Methods, it is possible that no correlation was seen with demographic variables since the high quality of care in Israel makes advanced medical equipment available in every delivery room.

The study emphasizes the value of personal care as well as that of the technical aspects of childbirth. It is not enough for a woman in labor to be treated by empathic, attentive and understanding caregivers; alternative and emergency equipment, as well as the accessibility of the staff, also play an essential role in her satisfaction and affect her childbirth experience. As childbirth is a meaningful event in a woman's life that involves pain and anxiety, having a sense of confidence in the medical staff and the equipment is essential for a pleasant childbirth experience.

The contribution of this research is in confirming the importance of alternative and emergency medical equipment as well as that of a large and accessible staff as elements that affect the satisfaction of a woman in labor, in addition to the importance of interpersonal communication with the caregivers. In other words, the Israeli woman wishes to feel safe, not only comfortable, when giving birth.

**Declarations**

Ethical approval and consent to participate:  
The ethical approval was granted by the Internal Ethical Review Board of Hadassah Academic College in March 2019.

The participants have confirmed their consent by written forms.

**Consent to publish**

The manuscript does not include any individual person's data, hence consent to publish is not applicable.

**Availability of data and materials**

The data sets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

The database supporting the conclusions of this article is available in the Israel Knesset Publishing <https://main.knesset.gov.il/pages/default.aspx> <https://main.knesset.gov.il/pages/default.aspx>

**Competing interests**

The authors declare that they have no competing interests.

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**Abbreviations**

NRJM- Non-Religious Jewish Mothers

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