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ORIGINAL ARTICLE

Observational Study

Timing theory integrated nursing combined behavior change integrated theory of nursing on primiparous influence

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Abstract

BACKGROUND

The comprehension and utilization of timing theory and behavior change can offer a more extensive and individualized provision of support and treatment alternatives for primipara. This has the potential to enhance the psychological well-being and overall quality of life for primipara, while also furnishing healthcare providers with efficacious interventions to tackle the psychological and physiological obstacles encountered during the stages of pregnancy and postpartum.

AIM

To explore the effect of timing theory combined with behavior change on self-efficacy, negative emotions and quality of life in patients with primipara.

METHODS

A total of 80 primipara cases were selected and admitted to our hospital between August 2020 and May 2022. These cases were divided into two groups, namely the observation group and the control group, with 40 cases in each group. The nursing interventions differed between the two groups, with the control group receiving routine nursing and the observation group receiving integrated nursing based on the timing theory and behavior change. The study aimed to compare the pre- and post-nursing scores of Chinese Perceived Stress Scale (CPSS), Edinburgh Postpartum Depression Scale (EPDS), Self-rating Anxiety Scale (SAS), breast milk knowledge, self-efficacy, and SF-36 quality of life in both groups.

RESULTS
After nursing, the CPSS, EPDS, and SAS scores of the two groups was significantly lower than that before nursing, and the CPSS, EPDS, and SAS scores of the observation group was significantly lower than that of the control group (P = 0.002, P = 0.011, and P = 0.001 respectively). After nursing, the breastfeeding knowledge mastery, self-efficacy, and SF-36 quality of life scores was significantly higher than that before nursing, and the breastfeeding knowledge mastery (P = 0.013), self-efficacy (P = 0.008), and SF-36 quality of life (P = 0.011) scores of the observation group was significantly higher than that of the control group.

CONCLUSION
The integration of timing theory and behavior change integrated theory has been found to be an effective approach in alleviating negative mood and stress experienced by primipara individuals, while also enhancing their self-efficacy and overall quality of life. This study focuses on the key concepts of timing theory, behavior change, primipara individuals, negative mood, and quality of life.

Key Words: Timing theory; Behavior change; Primipara; Bad mood; Quality of life

Core Tip: Pregnancy is a necessary stage for women to transition to the mother, for women, this stage is hard and great. At the same time, it will also exert pressure on intimate relationship and role change, body change and appearance, and women with low sense of security and insufficient psychological stress ability are prone to depression.To explore the effect of timing theory combined with behavior change on self-efficacy, negative emotions and quality of life in patients with primipara.80 cases of primipara admitted to our hospital from August 2020 to May 2022 were selected and divided into observation group and control group (40 cases each) by the different nursing interventions.Timing theory combined with behavior change integrated theory nursing application in primipara, can reduce their bad mood and pressure, enhance their breast milk knowledge, improve the rate of breastfeeding, but also promote the improvement of self-efficacy, and then improve the quality of life of primipara.

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INTRODUCTION

Pregnancy constitutes an essential phase for women as they embark on the journey of motherhood. This stage is characterized by both challenges and joys. Simultaneously, it can impose strain on intimate relationships, necessitate adjustments in roles, induce bodily transformations, and impact one's physical appearance. Women who possess a diminished sense of security and inadequate psychological resilience are susceptible to experiencing depressive symptoms[1]. In comparison to primipara, individuals with limited pregnancy experience encounter heightened difficulties in assuming responsibility, thereby increasing their susceptibility to experiencing negative emotions such as depression, anxiety, and maternal or new parent anxiety[2,3]. This will not only have an impact on the physical and mental well-being of primiparas, but it will also affect their ability to parent effectively, thereby hindering the healthy development of infants and young children. The psychological distress experienced by first-time mothers may result in improper feeding practices or a lack of breastfeeding, despite the widely recognized benefits of breastfeeding. Not only does breastfeeding contribute to maternal recovery and reduce the incidence of breast diseases, but it also promotes infant development and enhances their immune system[4]. In order to improve primipara's self-efficacy, effective nursing measures are particularly important .

The comprehensive nursing of timing theory refers to the whole-process and continuous comprehensive nursing according to the dynamic changing support needs of patients, which is carried out in accordance with the standard process, scientific and effective[5]. The integration theory of behavior change is an emerging nursing model in recent years[6]. It is a patient-centered guiding education, which can effectively establish the correct disease cognition of patients, improve their self-ability and social support, and promote the level of self-management[7]. There is a scarcity of literature regarding the utilization of integrated nursing in primipara. The objective of this study is to investigate the impact of the integration of timing theory and behavior change on the levels of self-efficacy, negative emotions, and quality of life among primipara patients.

MATERIALS AND METHODS

General information

A total of 80 primiparas were enrolled in our hospital between August 2020 and May 2022. These participants were subsequently divided into two groups, namely the observation group and the control group, with 40 patients assigned to each group. The selection criteria for inclusion were as follows: (1) All women were at full term and did not experience any delivery complications, such as umbilical cord wrapping or premature rupture of membranes; (2) All neonates exhibited typical development and were in a state of optimal health; (3) All primiparous individuals demonstrated robust health and were devoid of any infectious ailments, including AIDS and hepatitis; and (4) Primiparas and family gave informed consent for this study. Exclusion criteria: (1) Patients with pregnancy risk factors; (2) With severe failure of heart, liver, kidney and other important organs; (3) With mental cognitive abnormalities, unable to cooperate with investigators; (4) With incomplete clinical data; and (5) With breast milk transmitted diseases or not suitable for breastfeeding. This study was approved by the Ethics Committee of our hospital.

Nursing interventions

The control group administered comprehensive nursing care, encompassing health education, prenatal counseling, postpartum breastfeeding support, guidance on puerperal infection knowledge, and discharge follow-up, among other interventions.The observation group implemented timing theory combined with behavior change integrated theory nursing. The timing theory of comprehensive nursing as follows: (1) Late pregnancy: mainly for pregnant women health care, physical changes, the situation to pay attention to in late pregnancy, related complications, weight management, pregnancy activities, dietary guidance and other guidance. In the aspect of emotional management of pregnant women: Establish the correct cognition of pregnant women such as natural birth and cesarean section, labor analgesia, labor physiological changes and other related knowledge, and guide mindfulness music stress reduction training, to eliminate maternal tension, fear and other emotions; (2) Delivery: Mainly includes maternal and parenting, maternal mainly includes postpartum maternal rehabilitation and nursing, physiological changes, infant feeding practice and breastfeeding knowledge. Maternal mood mainly tells the maternal early postpartum depression signs and how to adjust the way. In parenting: guide maternal and newborn related knowledge, mainly include neonatal common diseases and prevention, neonatal care, premature infant care and fetal appendage abnormalities. The adjustment period primarily focuses on maternal and newborn care, encompassing maternal guidance on breastfeeding and breast nursing, nutrition guidance, knowledge pertaining to breastfeeding, care during the postpartum period, and prevention of postpartum depression. In terms of neonatal aspects, the emphasis lies on vaccination knowledge, nutrition guidance, as well as care for the skin and umbilical cord[8]; and (3) Adaptation period: mainly including postpartum pelvic floor rehabilitation, nursing and rehabilitation, contraceptive knowledge, emotional counseling, baby bath and sleep guidance, growth and development. The integrated theory of behavior change is as follows, which can be divided into four parts: (1) Through the way of one-to-one communication with maternal, collect the relevant information, to evaluate the psychological state, find the root of the problem, and targeted to solve maternal doubts, such as the use of medical knowledge to maternal on the advantages of breastfeeding and related knowledge. The specific content encompasses the notion that breast milk facilitates the digestion and absorption processes in newborns, thereby playing a crucial role in fostering the development of the neonatal nervous system. Simultaneously, breast milk fulfills the nutritional requirements of newborns while mitigating the likelihood of postpartum complications, such as breast diseases. At the same time, the nutritional needs of the newborn can be met, and it can also reduce the occurrence of postpartum complications such as breast diseases. In this way, the enthusiasm of maternal breastfeeding can be improved and the importance of breastfeeding can be realized, and the establishment of correct cognition is the first step of behavior change integration, so as to lay the foundation for subsequent behavior change[9]; (2) Personalized intervention programs should be formulated according to the evaluation results, which should be combined with the maternal situation, clinical routine and routine, which should be formulated together with the participation of the puerpera, such as long-term goals and current goals. Clinical routine, such as the guidance of maternal breast feeding, health education; (3) Make short-term plans together with the puerpera, such as some problems during the feeding period, feeding several times a day, feeding time, feeding specific environment and whether you need artificial assisted lactation, and list the possible problems in the list first to prevent adverse events during the feeding period; and (4) Encourage the maternal family to increase family support, give more care and emotional comfort, improve their confidence, and through TV, Internet and other ways to improve the maternal information support, create a comfortable and comfortable environment, is conducive to the maternal more secure breastfeeding. Specific nursing measures are as follows: (1) Prenatal two days for maternal knowledge of health education, and evaluate the attitude of maternal breastfeeding, and inform families and maternal newborn within 2 h after birth can feed right amount of water, postpartum 30 min to breastfeeding to milk secretion stimulation, and every 2 h for a feeding, for excessive milk maternal extrusion can keep, drink heating. Always pay attention to the maternal milk such as milk adequacy and color, and maternal related questions and answers; (2) According to the results of maternal assessment of maternal doubts or weak knowledge patience, and told families to study together, such as newborn correct bath, touch way, how to deal with occlusion, vomit, choking milk, scientific explanation of sucking and clenched fist neonatal reflex, and the newborn defecation, physiological signs in detail; (3) The first d of postpartum maternal psychological intervention, encourage and support maternal, listen to maternal psychological feelings, pay attention to the maternal pain. And help women how to correctly breastfeed, such as skills and posture, to explain the benefits of breastfeeding. And inform the mothers of adequate breast milk to improve their confidence and breastfeeding initiative. Ask the family members, especially the husband, should be more concerned and considerate of the maternal, can reduce the production of maternal bad mood, improve their initiative. Nursing staff to maternal breast massage guidance, in order to reduce

breast pain, appropriate massage can reduce the occurrence of mastitis and pain; (4) Postpartum third days continue to guide the maternal breastfeeding posture and breast massage, repeated practice, for cesarean section women, encourage them to get out of bed as soon as possible, sleeping more supine position, to overcome the pain; (5) Before discharge, guide maternal breast massage, and explain nutrition support, husband and wife life, physical and psychological care matters, appropriate foot soaking; and (6) After discharge, follow-up for 3 mo, telephone follow-up every week to understand whether the puerpera has emergencies, and answer the relevant questions of the puerpera, encourage the puerpera to breastfeed and their family members to care and support the puerpera. Both groups received the intervention from 7 mo of gestation to 3 mo postpartum.

Observational indicators

(1) The psychological stress of pregnant women is assessed through the Chinese Perceived Stress Scale (CPSS) before and after nursing. This scale includes 14 questions. Each question is divided into five options (scored with 0-4 points) according to the severity, and the total score is 56 points. The higher the score indicates the greater psychological pressure; (2) Maternal depression was assessed through the Edinburgh Postpartum Depression Scale (EPDS) before and after nursing. This scale includes 10 questions. Each question is divided into four options (scored with 0-3 points) according to the severity. The higher the score indicates the heavier greater the depression; (3) Maternal anxiety was assessed by the Self-rating Anxiety Scale (SAS) before and after nursing. This scale includes 20 questions. Each question is divided into four options (scored with 1-4 points) according to the severity. The higher the score, the more anxiety; (4) The mastery of maternal breast milk knowledge was assessed by the breastfeeding questionnaire before and after nursing, including 20 questions, each question was counted as 0-3 points, and the score was directly proportional to the mastery of breastfeeding knowledge; (5) Maternal self-efficacy was assessed by self-efficacy score before and after nursing, mainly including two dimensions of inner activity and skills. There were 30 items, and each item was 1-5 points, with a total score of 150 points, which was proportional to self-efficacy; and (6) SF-36 quality of life score was used to evaluate maternal quality of life before and after nursing. The evaluation content of this scale mainly includes six dimensions: General health status, physiological function, mental health, social function, emotional function and physical pain, and the total score is directly proportional to the quality of life of patients.

Statistical analysis

The data of this study were analyzed by using SPSS 23.0 software. The count data were expressed by [n, (%)] and compared by χ^2 test, the measurement data were expressed by mean ± standard deviation (SD) and compared by t-test. $P < 0.05$ was considered to be statistically significant.

RESULTS

Table 1 presents basic characteristics on patients. The mean age of patients in the observation and control groups were 26.15 ± 3.12 years and 27.12 ± 3.83 years, respectively. Regarding the mode of delivery, the observation group had 14 vaginal birth and 26 cesarean sections, while the control group had 18 vaginal birth and 22 cesarean sections. Regarding newborn gender, the observation group had 18 males and 22 females, while the control group had 21 males and 19 females. Regarding the feeding method, the observation group had 21 breast milk and 19 others, while the control group had 20 breast milk and 20 others. Regarding the education level, the observation group had six high school or below and 34 junior college or above, while the control group had eight high school or below and 32 junior college or above.

Comparison of CPSS scores between the two groups before and after nursing

Before nursing, there was no significant difference in the CPSS score between the two groups ($P = 0.574$). After nursing, the CPSS score of the two groups was significantly lower than that before nursing, and the CPSS score of the observation group was significantly lower than that of the control group ($P = 0.002$), as shown in Table 2.

Comparison of EPDS scores between the two groups before and after nursing

Before nursing, there was no significant difference in the EPDS score between the two groups ($P = 0.660$). After nursing, the EPDS score of the two groups was significantly lower than that before nursing, and the EPDS score of the observation group was significantly lower than that of the control group ($P = 0.011$), as shown in Table 3.

Comparison of SAS scores between the two groups before and after nursing

Before nursing, there was no significant difference in the SAS score of the two groups ($P = 0.493$). After nursing, the SAS score of the two groups was significantly lower than before nursing, and the SAS score of the observation group was significantly lower than the control group ($P = 0.001$), as shown in Table 4.

Comparison of breastfeeding knowledge mastery scores between the two groups before and after nursing

Before nursing, there was no significant difference in the score between the two groups ($P = 0.669$). After nursing, the score was significantly higher than that before nursing, and the score of the observation group was significantly higher than that of the control group ($P = 0.013$), as shown in Table 5.

Table 1 Comparison of the two groups of general information

Variables	Observation group	Control group	t/χ^2	*P* value
Age (yr)	26.15 ± 3.12	27.12 ± 3.83	1.242	0.218
Education level (high school and below/junior college or above)	6/34	8/32	0.346	0.556
Mode of delivery (vaginal birth/cesarean section)	14/26	18/22	0.833	0.361
Newborn gender (male/female)	18/22	21/19	0.450	0.502
Feeding method (breast milk/other)	21/19	20/20	0.050	0.823

Table 2 Comparison of Chinese Perceived Stress Scale scores between the two groups

Group	Before nursing	After nursing
Observation group (n = 40)	38.23 ± 8.75	15.3 5 ± 3.28[a]
Control group (n = 40)	39.25 ± 7.36	24.51 ± 5.23[a]
t	0.564	9.384
P value	0.574	0.002

[a]P < 0.05. Compared to the same group before nursing.

Table 3 Comparison of Edinburgh Postpartum Depression Scale scores between the two groups

Group	Before nursing	After nursing
Observation group (n = 40)	22.35 ± 6.36	9.75 ± 2.51[a]
Control group (n = 40)	21.75 ± 5.78	15.38 ± 4.35[a]
t	0.442	7.090
P value	0.660	0.011

[a]P < 0.05. Compared to the same group before nursing.

Table 4 Comparison of Self-rating Anxiety Scale scores between the two groups

Group	Before nursing	After nursing
Observation group (n = 40)	56.35 ± 10.58	28.75 ± 4.81[a]
Control group (n = 40)	58.03 ± 11.21	39.33 ± 7.35[a]
t	0.689	7.618
P value	0.493	0.001

[a]P < 0.05. Compared to the same group before nursing.

Comparison of self-efficacy scores between the two groups before and after nursing

Before nursing, there was no significant difference in the maternal self-efficacy score of the two groups (P = 0.838). After nursing, the maternal self-efficacy score was significantly higher than before nursing, and the observation group was significantly higher than the control group (P = 0.008), as shown in Table 6.

Comparison of the SF-36 quality of life scores between the two groups before and after nursing

Before nursing, there was no significant difference between the two groups (P = 0.578). After nursing, the quality of life scores of both groups were significantly higher than before nursing, and the observation group was significantly higher than the control group (P = 0.011), as shown in Table 7.

Table 5 Comparison of breastfeeding knowledge mastery scores between the two groups

group	Before nursing	After nursing
Observation group (n = 40)	32.25 ± 6.56	49.85 ± 9.36[a]
Control group (n = 40)	31.68 ± 5.23	42.32 ± 7.12[a]
t	0.430	4.050
P value	0.669	0.013

[a]P < 0.05. Compared to the same group before nursing.

Table 6 Comparison of self-efficacy scores between the two groups

Group	Before nursing	After nursing
Observation group (n = 40)	58.63 ± 10.25	123.25 ± 18.91[a]
Control group (n = 40)	59.12 ± 11.05	98.33 ± 15.82[a]
t	0.206	6.393
P value	0.838	0.008

[a]P < 0.05. Compared to the same group before nursing.

Table 7 Comparison of quality of life scores between the two groups

Group	Before nursing	After nursing
Observation group (n = 40)	51.23 ± 8.36	89.11 ± 11.91[a]
Control group (n = 40)	52.33 ± 9.21	72.22 ± 10.31[a]
t	0.559	6.781
P value	0.578	0.011

[a]P < 0.05. Compared to the same group before nursing.

DISCUSSION

According to the World Health Organization, about 10 percent of new maternal mothers worldwide have mental disorders, and about 20 percent of them have postpartum depression[10]. Studies have reported that women are at three times higher risk for depression after childbirth than during other periods[10,11]. This is also one of the most common postpartum mental health problems in women. The common symptoms are anxiety, depression, inability to feel happiness with the baby, inattention, hopelessness, poor appetite, early awakening, excessive sadness. In severe cases, self-injury or suicide and thoughts of harming the newborn[12]. At the same time, the bad mood of excessive mothers cannot be alleviated in time, which may also cause a series of complications, such as the impact of the relationship between mother and child, the maternal physical health and the relationship with the family, which will also reduce the enthusiasm, self-efficacy and quality of life of mothers in feeding the baby[13,14]. The reason may be that the puerpera has to experience psychological and physiological changes during pregnancy, the sense of responsibility to take care of the baby, the change of role and childbirth, changes in their own hormone level, economic reasons, husband and wife relationship, and lack of family support may affect the physical and mental health of the puerpera[15]. Therefore, the effective nursing mode is particularly important to improve the bad mood of primipara and improve their quality of life.

Timing theory is an emerging theory put forward by foreign scholars in the past decade, which makes different adjustments according to the support needs of patients' dynamic changes. The disease stage is roughly divided into several stages, among which the first few stages are mainly in the outpatient department and the ward, and the last adjustment period and the adaptation period are after returning to the family, so it can provide a basis for comprehensive nursing intervention, and the two can be combined[16]. In each period, the corresponding targeted nursing measures and one-to-one parenting and maternal nursing knowledge guidance, which can provide care mode, psychological education mode, family nursing mode and continuity of nursing for maternal. In this way, it can reduce maternal psychological pressure and depression, improve their self-efficacy and parenting competence, further promote the development of mother-child relationship, enhance happiness, and be beneficial to the physical and mental development of mother and

child[17]. The core of the behavior change integration theory mainly emphasizes the enhancement of patients' self-management ability, health cognition, knowledge and behavior ability in a specific environment, and improves the correct cognition of disease knowledge, so as to promote the patients' change in health behavior[18].

The integrated theory of behavior change brings together the core spirit of various theories and is more efficient and comprehensive in primiparas. Through the theoretical guidance, the first-time mothers can have a deeper understanding of breastfeeding, childbirth and parenting, which can improve the enthusiasm of the puerpera, and ask the family members to participate in the study, which can enhance the sense of family support[19]. After the guidance of nursing staff, primipara mothers can master the relevant knowledge and nursing posture, which can improve their self-efficacy and breastfeeding rate. The nursing intervention based on the integration theory of behavior change also guides the husband and his family to master the skills of judging the infant reaction and breastfeeding, which can reduce the maternal psychological pressure and build confidence. At the same time, through telephone follow-up, we can timely understand the emergency situation encountered after discharge, and patiently explain to improve their self-efficacy. In the results of this study, CPSS, CPDS and SAS scores of the observation group were significantly lower than those of the control group, breast milk knowledge, self-efficacy and SF-36 quality of life scores were significantly higher than that of the control group. Therefore, the theory of integrated nursing combined behavior change could effectively improve the bad mood and stress of primipara women, and improve their self-efficacy and quality of life. The timing of integrated nursing and behavior change theory integrated nursing theory can be further guidance of maternal pregnancy, childbirth, parenting knowledge, at the same time to assist the breastfeeding, enhance maternal confidence[20]. The integrated theoretical nursing theory of behavior change also evaluates the repetition of primiparas to guide their skill training and knowledge, which can effectively improve their self-efficacy, and thus make more efforts to overcome the relevant difficulties[21].

Limitations

Due to the nature of this study being a single-center study, there are limitations such as relatively small sample size and short follow-up time. Therefore, in future clinical practice, more prospective or retrospective studies with larger sample sizes should be conducted to further To explore the effect of timing theory combined with behavior change on self-efficacy, negative emotions and quality of life in patients with primipara.

CONCLUSION

Timing theory combined with behavior change integrated theory nursing application in primipara, can reduce their bad mood and pressure, enhance their breast milk knowledge, improve the rate of breastfeeding, but also promote the improvement of self-efficacy, and then improve the quality of life of primipara.

ARTICLE HIGHLIGHTS

Research background

Primigravida may experience fluctuations in self-efficacy, negative emotions such as anxiety, depression, *etc*., and changes in quality of life. These challenges may stem from physical and psychological stress during the pregnancy and postpartum stages, such as pain, insomnia, difficulty in breastfeeding, restoring body image, *etc*. These factors may further affect the mental health and quality of life of primiparous women.

Research motivation

Behavior change integrated theory nursing theory also evaluates the repetition of primipara, guides their skill training and knowledge, which can effectively improve their self-efficacy, and thus work harder to overcome related difficulties.

Research objectives

It aims to explore the effect of integrated nursing on self-efficacy, bad mood and quality of life.

Research methods

Primiparous mothers who met the inclusion criteria were randomly divided into observation and control groups. The experimental group received the theoretical integrated care intervention, whereas the control group received the usual care intervention.

Research results

By implementing the intervention, we found that the primipara in the observation group showed a significantly better trend than the control group in terms of self-efficacy, bad mood and quality of life.

Research conclusions

This nursing model can also help primipara better understand the knowledge of breastfeeding, recognize the importance of breastfeeding, enhance their self-care ability and self-protection awareness.

Research perspectives

Timing theory integrated nursing combined behavior change integrated theory nursing intervention can effectively improve the self-efficacy of primipara, reduce the incidence of bad mood, and improve their quality of life.

FOOTNOTES

Co-first authors: Yan-Xia He and Yang Lv.

Author contributions: He YX and Lv Y designed the research; Lan TT, Deng F, and Zhang YY contributed new reagents/analytic tools; Zhang YY, Lan TT, Deng F analyzed the data; He YX and Lv Y wrote the paper; All authors were involved in the critical review of the results and have contributed to, read, and approved the final manuscript; He YX and Lv Y contributed equally to this work as co-first authors equally to this work. The reasons for designating He YX and Lv Y as co-first authors are threefold. First, the research was performed as a collaborative effort, and the designation of co-corresponding authorship accurately reflects the distribution of responsibilities and burdens associated with the time and effort required to complete the study and the resultant paper. This also ensures effective communication and management of post-submission matters, ultimately enhancing the paper's quality and reliability. Second, the overall research team encompassed authors with a variety of expertise and skills from different fields, and the designation of co-first authors best reflects this diversity. This also promotes the most comprehensive and in-depth examination of the research topic, ultimately enriching readers' understanding by offering various expert perspectives. Third, He YX and Lv Y contributed efforts of equal substance throughout the research process. The choice of these researchers as co-first authors acknowledges and respects this equal contribution, while recognizing the spirit of teamwork and collaboration of this study. In summary, we believe that designating He YX and Lv Y as co-first authors of is fitting for our manuscript as it accurately reflects our team's collaborative spirit, equal contributions, and diversity.

Institutional review board statement: This study protocol was approved by the Sichuan Provincial People's Hospital, and all the families have voluntarily participated in the study and have signed informed consent forms.

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