



Virtual Reality (VR) Glasses for Oxytocin Relaxation Therapy to Increase Breast Milk Production of Postpartum Mothers

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ABSTRACT

Background: Breast milk is the best food for newborns until the age of 2 years, but many breastfeeding mothers have difficulty breastfeeding and cause anxiety, stress, and depression. This condition causes the growth of the hormone oxytocin to be slow so that the milk production does not go smoothly. Objective: developing the application of virtual reality (VR) glasses as oxytocin relaxation therapy to increase breast milk production in postpartum mothers. Method: the method used was pre-experimental with a one-group pretest-posttest design approach. Results: This research involved respondents with the criteria; breastfeeding mothers with an age range of 20-35 years, the majority of whom have higher education, most of whom work. The results show that there is a difference in the average before and after treatment with VR glasses, namely the average before treatment was 57.11 with an SD of 13,546, the average after treatment was 73.55 with an SD of 9.921. Statistical test results obtained a p-value of 0.000 ($p <$) with a difference in the average value of 11.44. The conclusion is that postpartum mothers who are breastfeeding are comforted by the application of audio-visual, thereby stabilizing the increase in the hormone oxytocin which acts as an increase in breast milk production.

Keywords: VR Glasses, Breastfeeding, Postpartum mothers

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INTRODUCTION

The COVID-19 pandemic has caused restrictions on services in all sectors, especially health services. The development of the world of technology has had an impact on all fields of expertise, including midwifery practice¹. Digital transformation and innovations in the health system are a real challenge and an urgent priority, especially in Indonesia as the fourth biggest population in the world².

As a developing country, Indonesia must increase good human resources. Efforts to improve the quality of the nation's generation begin early with the fulfillment of nutritional needs in babies. The need for growth and development of babies until the age of 6 months and the only food that contains high nutrition is breast milk. By only giving breast milk for 6 months, it can overcome children's growth disorders due to malnutrition³.

Breast milk is produced by releasing the hormone oxytocin through the ducts in the breast. Milk production possibly occurs during pregnancy or after delivery. The baby's life is influenced by the process of early expulsion of breast milk. Breast milk secretes colostrum in the first days which is the highest nutritional value⁴.

The World Health Organization (WHO) recommends exclusive breastfeeding for babies until the age of 6 months because of the great benefits of breastfeeding for babies. For the period 2007-2014, the coverage of exclusive breastfeeding was around 36% according to WHO data (2016). Meanwhile, in 2013 the coverage of exclusive breastfeeding in Indonesia was 54.3% (Kemenkes RI, 2014). Meanwhile, in DKI Jakarta, the coverage of exclusive breastfeeding in 2018 was 45.66%, in 2019 it was 68.08%, and in 2020 it was 70.86%⁵. The coverage of exclusive breastfeeding in East Jakarta in 2019 it was 38,9%, in 2020 it was 47,25%⁶.

Mother's milk or breast milk is the best food for babies from birth until the age of 2 years. Breast milk contains nutrients that are suitable for the baby's needs, are easily digested and absorbed by the baby, are always clean, and are sterile. Therefore, the program of breastfeeding without other foods for aged zero to six months or commonly called exclusive breastfeeding is very important in the optimal growth and development of the infants⁷.

Unfortunately, many breastfeeding mothers have difficulty when breastfeeding, because the production of milk does not go smoothly. Many factors cause breast milk to not run smoothly, one of which is the emotional factor. Anxiety, stress, and depression can have an impact on the let-down reflex in the breasts of nursing mothers, which is useful for helping breast milk come out more smoothly. In addition, emotional factors also increase the hormone cortisol or stress hormone which is inversely proportional to its growth with the hormone oxytocin, causing breastfeeding mothers to find it difficult to express breast milk⁴.

Oxytocin is a hormone that plays an important role in triggering the let-down reflex naturally. The higher the level of the hormone oxytocin will maximize the capacity of the amount of milk storage in the breast. Nerve impulses from the nipples to the magnocellular oxytocin nerve in the hypothalamus

stimulate oxytocin synthesis and are then carried to capillary neurophysics. The result of this stimulation will reduce or eliminate the effect of dopamine which causes the release of the hormone prolactin⁸.

Factors that cause an increase in the hormone oxytocin and the Letdown Reflex, among others, such as when a mother is breastfeeding her child, seeing the baby, listening to the baby's voice, and kissing the baby. In addition, the process of stimulating the oxytocin hormone can also be done by providing an atmosphere of comfort and avoiding stress, such as breast massage⁴.

Based on the explanation, one alternate solution that can be offered is to develop an Oxytocin Hormone Stimulus Education Information System for Breastfeeding Mothers in which they will receive adequate education regarding the method and process of breastfeeding. In addition, this information system can assist breastfeeding mothers in increasing the hormone oxytocin using audio-visual media that displays a collection of entertaining videos with baby themes.

METHOD

This research used a pre-experimental approach with one group pretest-posttest design. The population in this research were all mothers who gave birth at the Anny Rahardjo Clinic, in this regard 40 respondents. The sample of this research was all postpartum mothers who breastfed babies aged 0-6 months at the Anny Rahardjo Clinic with a total of 40 respondents. The sampling technique used in this research was total sampling. The independent variable in this research was the application of oxytocin relaxation Virtual Reality (VR) glasses. The dependent variable was the production of breast milk in postpartum mothers who breastfeed babies 0-6 months.

Data collection in this research was carried out before the use of Virtual Reality glasses. The researchers distributed questionnaires to breastfeeding mothers aged 0-6 months. After the questionnaire was filled in, the researcher checked the completeness of the answers from the questionnaire given to the respondents and then collected and corrected by the researcher. After completion, the researcher gave the treatment by asking breastfeeding mothers to wear oxytocin relaxation Virtual Reality glasses. Next, the researcher gave a questionnaire after applying the oxytocin relaxation Virtual Reality glasses. After everything is done, the answers in the questionnaire are processed using the SPSS program. After that, the researchers processed the results of the data processing and concluded from the research results. The analysis used in this research is Wilcoxon.

RESULTS

Table 1. Characteristics of Respondents by Age of Postpartum Mothers who Breastfeed Infants Age 0-Months

Characteristics	Respondent	Frequency (N)	Percentage (%)
Age	< 20 year	8	20,0
	20 -35 year	27	67,5
	> 35 year	5	12,5
Education	Elementary	12	30,0
	High	28	70,0
Occupation	Working	30	75,0
	unemployed	10	25,0

The results of table 1 show the characteristics of the respondents based on the following specifications (a) Age. The total number of respondents aged more or less 20 years is 6 people (15.0%) and aged 20-35 years totaling 30 people (75.0%), (b) Education. It shows that from the total of 40 respondents. Twelve respondents are those with basic education (30.0%) and 28 respondents with higher education (70.0%).), (c) Occupation. It shows that from the total of 40 respondents, 30 of them are working breastfeeding mothers and 10 of the respondents are unemployed (25,0%).

Table 2. Milk Production Before and After Application of Virtual Reality Glasses as Oxytocin Therapy for Postpartum Mothers who are Breastfeeding Infants Age 0-6

Variable	group	Mean	SD	value*
the use of VR glasses	Before	57,11	13,546	<i>p-value</i> 0,000 ($p < \alpha$)
	After	73,55	9,921	
	Difference	11,44		

Table 2 shows that there is a difference in the average application of glasses before and after the treatment of oxytocin therapy using VR glasses. The average before the application of VR glasses is 57.11 with an SD of 13,546, the average after the application of VR glasses is 73.55 with an SD of 9.921. Statistical test results obtained the p-value of 0.000 ($p < \alpha$) with a difference in the average value of 11.44. It can be concluded that there is a significant difference between the application before and after the application of virtual reality glasses as oxytocin therapy.

DISCUSSION

Increased Breast Milk Production Before Application of Oxytocin Therapy Virtual Reality Glasses

The results of the research show that the average increase in breast milk production before the use of virtual reality oxytocin therapy was 57.11. Factors that cause respondents to have a low average score before implementation, because the results of this research also found that as many as 10 respondents (25%) were not working. It has been widely agreed that working is closely related to social and cultural interaction factors, while social and cultural interaction is closely related to the process of exchanging information⁹. From the results of the research, it was found that the age of respondents <20 years as many as 8 (20%) and > 35 years as many as 5 (12.5%). Age is a factor that affects breast milk production,

age of 20 to 35 years is a healthy production period, where the physical and mental condition of the mother is in the best condition and ready to breastfeed the infant. The development of the reproductive organs has also been perfect, including the development of the breasts that have shown maturity and are ready to give exclusive breastfeeding. Breastfeeding mothers who are still 22 years old will produce more breast milk than those aged 35 years and over, their milk production will decrease more¹⁰.

The results of this research are in line with Budiarti (2010)¹¹ in her research which stated that the age of breastfeeding mothers will affect the production of breast milk. Based on the research and some literature, it can be said that mothers who are breastfed for 22 years have better milk production compared to those who are 35 years old and over because, in this range of age, mothers will experience a decrease in the amount of milk production. The lack of stimulation of the hormones prolactin and oxytocin causes a decrease in milk production and expenditure in the first days after giving birth which affects the growth and production of breast milk and production.

Increased Milk Production After the Application of Oxytocin Therapy Virtual Reality Glasses

The results show that the average increase in breast milk production after the application of Virtual Reality Glasses for Oxytocin Therapy was 73.55. This is supported by the results of the study that most of the respondents graduated from tertiary education (Diploma/Bachelor) as many as 28 (70%). According to Notoatmojo's (2012)⁹ theory, educated people will have knowledge that will change their mindset and behavior so that breastfeeding mothers with higher education will have knowledge about breastfeeding and change their behavior so that milk production runs smoothly. Based on this research, it is supported by Budiarti (2010)¹¹ that high school education can respond more quickly to what others have given to it. Compared to elementary school education or no school. Because breastfeeding mothers with higher education are certainly easy to receive various information about several innovative ways to increase breast milk production along with technological developments by health workers.

One of the stimuli to produce abundant breast milk is the application of oxytocin therapy virtual reality glasses. Oxytocin hormone is a hormone that supports the Letdown Reflex. The high intensity of the oxytocin hormone increases the amount of milk storage in the breast. This condition causes breast milk to flow smoothly. Oxytocin starts to work when the mother feels like breastfeeding, even though the baby has not sucked the breast¹². This factor increases oxytocin hormone and letdown reflex. It is like in the real-life condition when a mother is breastfeeding her child. She is staring at the baby lovingly, listening to the baby's voice, hugging and kissing the baby⁴. Therefore, it is appropriate to apply oxytocin relaxation virtual reality glasses in stimulating breast milk production.

Application Virtual Reality Glasses as Oxytocin Therapy to Increase Breast Milk Production

The results of the research show that p-value 0.000 ($p <$) with a difference in the average value of 11.44, it can be concluded that there is a significant difference between the increase in breast milk production before and after the application of glasses. It can be proven that there is an effect of applying virtual reality glasses on oxytocin therapy on increasing breast milk production.

Breast milk is the best food for newborns up to the age of 2 years. Currently, many breastfeeding mothers experience difficulties during the breastfeeding process which has an impact on the Letdown Reflex so that breast milk does not run smoothly. Other factors that can affect the Letdown Reflex are emotional factors, such as anxiety, stress, and depression, which causes the growth of the oxytocin hormone to be slow and the growth of the hormone cortisol or stress hormone to increase. The oxytocin hormone can be increased by several factors, such as seeing education about breastfeeding, seeing babies, listening to baby voices, and kissing babies⁴. However, currently breastfeeding mothers do not know what education system should be learned about breastfeeding and how to increase the oxytocin hormone in detail.

The latest innovation with the virtual reality oxytocin therapy system contains information about the breastfeeding process and uses audio-visual media that displays a collection of entertaining videos with baby themes. In this system, some features can be accessed, therapy, info, and registration features. Breastfeeding mothers can read lessons about exclusive breastfeeding, the hormone oxytocin, how to breastfeed properly, and breastfeeding partners¹³. With this feature, it is hoped that breastfeeding mothers can understand how to breastfeed and what factors can increase the oxytocin hormone so that breast milk becomes smooth.

In addition, the features in the virtual reality oxytocin therapy system contain a collection of cute baby videos that are directly linked to Youtube and can also view 4-dimensional videos by utilizing virtual reality technology. The virtual reality video contains several babies who are in a clinic doing swimming and baby massage. It can increase the mother's hormone oxytocin. Furthermore, there is a registration page provided for breastfeeding mothers to fill in their data and join a breastfeeding mother community. Breastfeeding mothers can join the community so that they can share experiences and learnings with other breastfeeding mothers¹⁴.

The education process for breastfeeding mothers is very important to know in general and must be implemented easily so that breastfeeding mothers can be educated properly. In addition, breastfeeding mothers who have problems with the instability of the oxytocin hormone can also be entertained by the audio-visual content provided so that it allows them to relax, calm down and increase the amount of milk that is influenced by the oxytocin hormone.

CONCLUSIONS

The results of this research suggest that virtual reality (VR) glasses as oxytocin relaxation therapy are proven to increase breast milk production in postpartum mothers. Considering its effectiveness, the use of VR glasses can be widely used by establishing partnerships with several clinics or hospitals that provide education and care for mothers and toddlers.

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