

Effectiveness of an Educational Program on Nurse's Knowledge about Managing of Respiratory Distress Syndrome on Pediatric Units at Al-Diwaniyah City Hospital

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Abstract- the study aims: To assess pediatric nurse's knowledge about managing of Respiratory Distress Syndrome, to determine the effectiveness of the educational program through comparing nurse's knowledge in pre and post education program. And to find out the association between nurse's knowledge and their demographic data. **Methodology** A pre-test and post-test quasi-experimental study design was carried out in order to evaluate the effectiveness of an educational program on nurse's knowledge about management of newborn babies with Respiratory Distress Syndrome (RDS) in pediatric units at Al Diwaniyah teaching Hospital. The study began from September 20th 2016 to August 6th, 2017. A quasi-experimental design was carried out from March 12th to June 22nd, 2017. A purposive sample comprised of (40) nurses was divided into two groups (study and control) groups. The study group was consisted of (20) nurses were exposed to the educational program. While, the control group had only (20) nurses without exposing to the educational program. The study questionnaire divided in two parts (Onyejuruwa, 2014). **Part I:** Self-managed questionnaire sheet identified with demographic for nurses' information: This part of questionnaire contains (age, gender, level of education, training sessions, number of training sessions, years of experience in pediatric units. **Part II:** Self-controlled poll sheet related to nurse's knowledge information about management of pediatric with respiratory distress syndrome. statistical data analysis approaches are used in order to analyze the data of the study under application of the statistical package (SPSS) ver. (22), and the Microsoft excel (2016). **Descriptive Data Analysis:** Tables (Frequencies and Percentages). Statistical figures (Bar Charts). Summary Statistics tables including: Mean, Mean of scores, Standard Deviation (SD), and relative sufficiency (RS%). In addition, the assessment by mean of scores (1.5) due to the correct and incorrect items scales with two levels of assessment, pass (<1.5), and fail (>1.5). **Results:** Shows the statistical analysis of demographic data of study sample was mainly females (60%) in the study group as well as in the control group (65%) females. According to age groups, the most age group was (25-29) years (35%) for the study and control groups. Regarding to educational, the study found that most nurses in the study group were graduated from secondary nursing school (80%) and (70%) in the control group. In regard to respiratory distress syndrome training nurses were (55%) in the study group and (45%) in the control group. Number of training courses for

nurses was (1-3) courses in the study group (35%) and (40%) for the control group. Owing to the number of work and experience years were (45%) in the study and control groups. **Conclusions:** A large portion of nurses in pediatric units had information shortfall concerning administration of patient with Respiratory distress syndrome. **Recommendations:** Urging nurses to be selected in instructional courses and meeting to enhance their insight and stay up with the latest toward Respiratory distress syndrome.

Index Terms- Effectiveness, Educational Program, Nurse, Knowledge, Management, Respiratory distress syndrome

I. INTRODUCTION

Respiratory Distress Syndrome (RDS) affects 40,000 infants each year in USA and accounts for approximately 20% of neonatal deaths. RDS typically affects infants <35 weeks' gestational age (GA) but may affect older infants who have delayed lung maturation⁽⁹⁾. Most common causes of newborn deaths at birth are respiratory distress syndrome, premature and low birth weight. Among those with normal birth weight, common causes of mortality were respiratory distress (90.4%), prematurity (27.7%), congenital malformations (26.5%), hypoglycemia (14.5%), infections (8.4%) and brain insult due to hypoxia (8.4%)⁽⁵⁾. Neonatal period is around from (0 to 28 days of life) which is the most hazardous period of life because of various problems/diseases of neonates. Some newborns in developing countries have intrauterine growth retardation life, reflecting the nutritional status of mothers⁽⁵⁾. About 42% of the infant's death in Iraq occurs within the first 28th days of life. Neonatal morbidity and mortality increasing in developing countries day by day due to lack of available resources⁽¹⁰⁾. The sources of anxiety and fear among parents are due to death of a newborn child. Anxiety and fear are the responsibility of medical and nursing staff. Fear and anxiety are both in developed and developing worlds, while the changes in mortality rate among newborn children all over the world are decreasing very slowly despite the development of the world⁽⁵⁾.

II. STUDY OBJECTIVES

- 1- To assess pediatric nurse's knowledge about managing of Respiratory Distress Syndrome.
- 2- To determine the effectiveness of the educational program through comparing nurse's knowledge in pre and post education program.
- 3- To find out the association between nurse's knowledge and their demographic data.

III. METHODOLOGY

Study Design: A pre-test and post-test quasi-experimental study design was carried out in order to evaluate the effectiveness of an educational program on nurse's knowledge about management of newborn babies with Respiratory Distress Syndrome (RDS) in pediatric units at Al Diwaniyah teaching Hospital. The study began from September 20th 2016 to August 6th, 2017.

Setting of the Study: The study is conducted in Al Diwaniyah City/ Al Diwaniyah Health Directorate / Maternity and Pediatric Educational Hospital in Diwaniyah.

Study Sample: A quasi-experimental design was carried out from March 12th to August 6th, 2017. A purposive sample comprised of (40) nurses was divided into two groups (study and control) groups. The study group was consisted of (20) nurses were exposed to the educational program. While, the control group had only (20) nurses without exposing to the educational program.

Instrument Construction: To appraise the viability of educational program on nurses' knowledge about management of respiratory distress syndrome in Pediatric units at Maternity and Pediatric Teaching Hospital in Al-Diwaniyah city, the researcher constructed and modified a questionnaire format to achieve the study aims. The study questionnaire divided in two parts ⁽⁷⁾.

Part I: Self-managed questionnaire sheet identified with demographic for nurses' information: This part of questionnaire contains (age, gender, level of education, training sessions, number of training sessions, years of experience in pediatric units.

Part II: Self-controlled poll sheet related to nurse's knowledge information about management of pediatric with respiratory distress syndrome.

This part was to evaluate nurse's information about management of pediatric with respiratory distress syndrome. The questionnaire is additionally reviewed by nurses to understand its content previously. The time consumed for replying the questionnaire by each nurse was (45-60) min. This part was contained (30) multiple choice questions. Each question composed from three answer types. Each question's score answer was as follow: The right answer score was two, but the wrong answer score was only one.

Statistical Analysis: The following statistical data analysis approaches is used in order to analyze the data of the study under application of the statistical package (SPSS) ver. (22), and the Microsoft excel (2016):

1. Descriptive Data Analysis:

- a- Tables (Frequencies and Percentages).
- b- Statistical figures (Bar Charts).
- c- Summary Statistics tables including: Mean, Mean of scores, Standard Deviation (SD), and relative sufficiency (RS%). In addition, the assessment by mean of scores (1.5) due to the correct and incorrect items scales with two levels of assessment, pass (<1.5), and fail (>1.5).

2. Inferential Data Analysis:

This approach used to accept or reject the statistical hypothesis, which includes the following:

- a- Pearson correlation coefficient to determine the study instrument reliability by using the test and re-test reliability technique.
- b- Independent sample t-test.
- c- Paired t-test.
- d- Analysis of variance (ANOVA).

IV. RESULTS OF THE STUDY

Table (1) study participants' demographic data

| Demographic Data | Rating And Intervals | Groups | | | |
|---------------------|--------------------------|--------|----|---------|----|
| | | Study | | Control | |
| | | Freq. | % | Freq. | % |
| Gender | Male | 8 | 40 | 7 | 35 |
| | Female | 12 | 60 | 13 | 65 |
| Age /years | <= 24 | 4 | 20 | 4 | 20 |
| | 25 – 29 | 7 | 35 | 7 | 35 |
| | 30 – 34 | 2 | 10 | 4 | 20 |
| | 35 – 39 | 4 | 20 | 4 | 20 |
| | 40+ | 3 | 15 | 1 | 5 |
| Levels of education | Secondary nursing school | 16 | 80 | 14 | 70 |
| | Technical institute | 3 | 15 | 5 | 25 |
| | College of nursing | 1 | 5 | 1 | 5 |

| | | | | | |
|------------------------------|------------|----|----|----|----|
| Training enrolment | Yes | 11 | 55 | 9 | 45 |
| | No | 9 | 45 | 11 | 55 |
| Numbers of training sessions | 1 – 3 | 7 | 35 | 8 | 40 |
| | 4+ | 4 | 20 | 3 | 15 |
| Years of experience | 1-3 | 3 | 15 | 1 | 5 |
| | 4 – 6 | 8 | 40 | 10 | 50 |
| | 7 and more | 9 | 45 | 9 | 45 |

Table (1) shows the statistical analysis of demographic data of study sample was mainly females in the study group(60%) as well as in the control group (65%). In the study and control groups the most age group was (25-29) years (35%). Regarding to educational level, this work showed that most nurses in the study group were graduated from secondary nursing school (80%), but (70%) in the control group. In regard to

respiratory distress syndrome training nurses were (55%) in the study group as well as (45%) in the control group. The number of training courses for nurses was (1-3) in the study group (35%), but (40%) for the control one. In both groups the number of the work and experience years were (45%).

Table (2) Overall assessment of the study participants prior to perform the education program (pre-test)

| Overall assessment | Study Group | | | Assessment | Control Group | | | Assessment |
|--------------------|-------------|-----|-------|------------|---------------|-----|-------|------------|
| | Freq. | % | M.S. | | Freq. | % | M.S. | |
| Pass | 7 | 35 | 1.431 | Fail | 6 | 30 | 1.431 | Fail |
| Fail | 13 | 65 | | | 14 | 70 | | |
| Total | 20 | 100 | | | 20 | 100 | | |

%: percentage Freq.: Frequency
Df: degree of freedom M.S.: Mean of score

Table (4.3) demonstrations overall assessment of the study participants (study and control groups) prior to perform the

education program (pre-test) indicates that the investigation was frustrated in both groups (1.431) before the educational program.

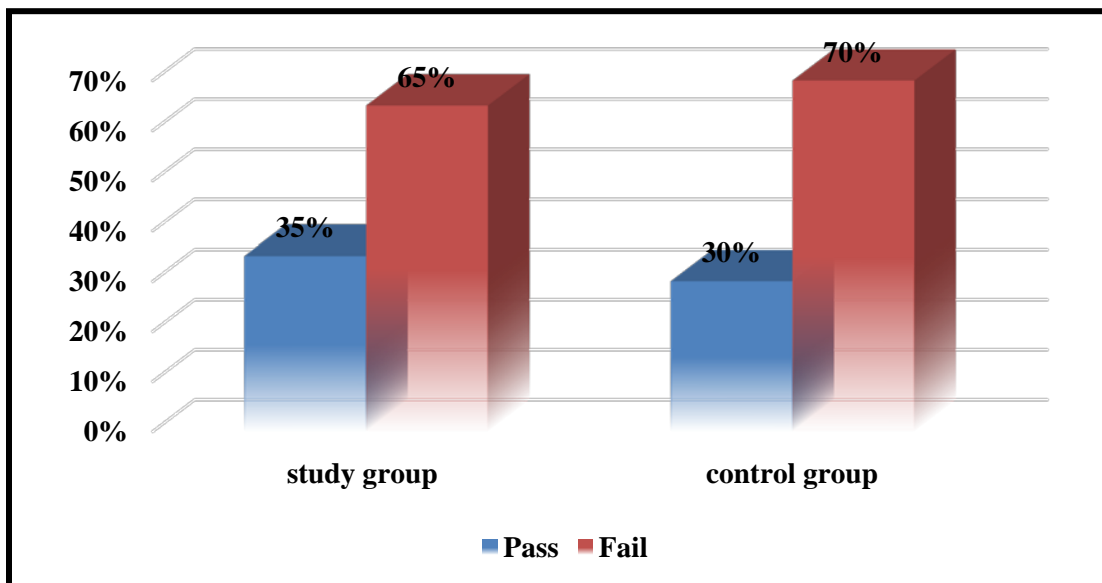


Figure (1) OVERALL assessment of the study participants (study and control groups) prior to perform the education program (pre-test)

Table (3) mean differences of knowledge prior between both groups due to perform the education program (pre-test)

| Groups | Mean | Std. Deviation | T-Value | Df. | P-Value |
|---------------|--------|----------------|---------|--------|---------|
| Study Group | 1.4317 | 0.070 | 0.229 | 37.927 | 0.82 |
| Control Group | 1.4367 | 0.067 | | | NS |

P Value: probability value
Df: degree of freedom

Ms.: Mean of score
T value: t-test

Table (3): Explains the comparison of mean differences of knowledge prior between both groups so as to perform the education program(pre-test). There are no significant variances in pre-test among the study and control groups (P. value = 0.82) that indicated insufficient knowledge in pre-test for both groups.

Table (4) Overall assessment of the study participants (study and control groups) after perform the education program (post-test)

| Overall assessment | Study Group | | | | Control Group | | | |
|--------------------|-------------|-----|------|------------|---------------|-----|------|------------|
| | Freq. | % | M.S. | Assessment | Freq. | % | M.S. | Assessment |
| Pass | 20 | 100 | 1.9 | Pass | 7 | 35 | 1.44 | Fail |
| Fail | 0 | 0 | | | 13 | 65 | | |
| Total | 20 | 100 | | | 20 | 100 | | |

%: percentage **Freq.:** Frequency **Ms.:** Mean of score

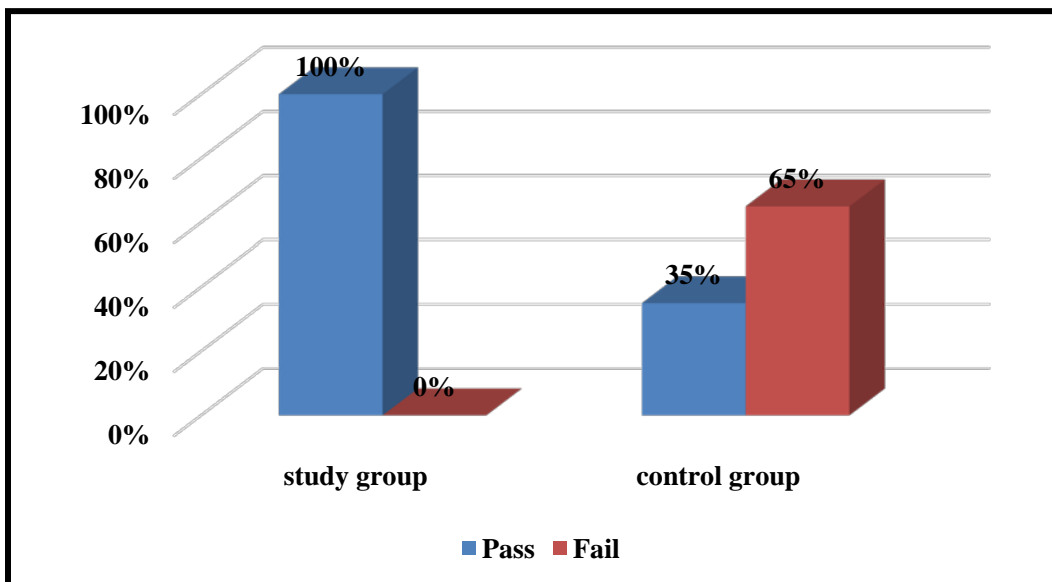


Table (4) Demonstration overall assessment of the study participants (study and control groups) after perform the education program (post-test). This table reveals that the study group participants were passed assessment (1.9) mean of score. While, the control group had failed assessment (1.44) mean of score.

Figure (2) OVERALL assessment of the study participants after perform educational program (post-test).

Table (5) mean differences between the two groups knowledge after perform the educational program (post-test)

| Groups | Mean | Std. Deviation | T-Value | D.F. | P-Value |
|---------------|-------|----------------|---------|--------|-------------|
| Study Group | 1.900 | 0.054 | 23.005 | 35.535 | 0.001 HS |
| Control Group | 1.442 | 0.071 | | | |

Freq.: Frequency MS: Mean of score T value: t-test
 HS: High significant P Value: probability value Df: Degree of freedom

Table (5): Found that there was a highly significant difference (HS) with p-value (0.001) in post-test for the study group.

Table (6) mean differences between the pre and post-test scores for the two groups.

| Groups | Pairs | Mean | Std. Deviation | t-value | d.f. | p-value |
|---------------|-----------|-------|----------------|---------|------|-------------|
| Study group | Pre-test | 1.431 | 0.070 | 41.791 | 19 | 0.001 HS |
| | Post-test | 1.90 | 0.054 | | | |
| Control group | Pre-test | 1.436 | 0.067 | 0.364 | 19 | 0.72 NS |
| | Post-test | 1.441 | 0.070 | | | |

Freq.: Frequency Ms.: Mean of score NS: No significant
 HS: High significant P Value: probability value D.F.: degree of freedom
 T value: t-test

Table (6): Demonstrates variance mean differences between the pre and post-test scores for both groups. This table appear highly significant differences between pairs groups at p-value (0.001).

Table (7) mean differences between the study group nurses' knowledge (post-test) and their gender and training sessions

| Variables | Rating | N | Mean | Std. Deviation | T-Value | D.F. | P-Value |
|-------------------|--------|----|--------|----------------|---------|------|-------------|
| Gender | Male | 8 | 1.9042 | 0.05756 | 0.274 | 18 | 0.787 NS |
| | Female | 12 | 1.8972 | 0.05405 | | | |
| Training sessions | Yes | 11 | 1.903 | 0.06047 | 0.27 | 18 | 0.79 NS |
| | No | 9 | 1.8963 | 0.04843 | | | |

Freq.: Frequency T value: t-test Ms.: Mean of score
 P Value: probability value N.: Number DF: degree of freedom

Table (7): Demonstrations that there is no significant related between post-test and two variables in demographic data of the study group, while the Gender of the sample shows there are no significant association at P-value (0.787), also training sessions shows no significant association at P-value (0.79) with nurse's knowledge.

Table (8) mean differences between the study group nurses' knowledge (post-test) and their age, levels of education, number of training sessions, and years of experience

| Variables | Rating | N | Mean | Std. Deviation | F | Sig. |
|-----------------------------|---------------------|----|------|----------------|-------|-------------|
| Age / years | <= 24 | 4 | 1.91 | 0.07 | 0.311 | 0.866 NS |
| | 25- 29 | 7 | 1.90 | 0.05 | | |
| | 30- 34 | 2 | 1.90 | 0.09 | | |
| | 35- 39 | 4 | 1.88 | 0.06 | | |
| | 40+ | 3 | 1.92 | 0.05 | | |
| Levels of education | Secondary school | 16 | 1.90 | 0.05 | 0.79 | 0.47 NS |
| | Technical institute | 3 | 1.90 | 0.09 | | |
| | College of nursing | 1 | 1.97 | 0.00 | | |
| Number of training sessions | No training sess. | 10 | 1.90 | 0.06 | 0.06 | 0.942 NS |
| | 1- 3 | 6 | 1.90 | 0.04 | | |
| | 4+ | 4 | 1.91 | 0.07 | | |
| Years of experience | <= 3 | 3 | 1.91 | 0.07 | 0.994 | 0.391 NS |
| | 4- 6 | 8 | 1.88 | 0.05 | | |
| | 7+ | 9 | 1.91 | 0.05 | | |

%: percentage **N.: Number** **Ms.: Mean of score**
HS: High significant **NS: no significant** **F: F-test**

Table (8): Shows that there is no significant association between post-test and some variables in demographic data of the study group, while the age of the sample shows there are no significant association at P-value (0.866), also levels of education shows no significant association at P-value (0.47) with nurse's knowledge. Number of training sessions of the sample shows there are no significant association at P-value (0.942). In addition, this table demonstrates no significant association among years of experience and nurse's knowledge of study group in post-test at P-value (0.391).

V. DISCUSSION OF THE STUDY RESULTS

1.Part-I: Discussion of Demographic Data of the study

sample:About the gender of the study subjects, the highest percentages were females in both groups (study and control groups) that is inconsistency with results of (8) who stated that male was a dominant gender in both (study and control groups), but consistency with the study results of Babeker and Elrufaie, 2015(11). According to age groups, the greatest age group was (35%) within (25-29) years

for the study and control groups. This result was approved by Babeker and Elrufaie, 2015(11) who stated that majority of the study subject's age were between (25-30) years old. In regard to educational level, the study group of the most nurses were finished their study from secondary nursing school (80%) and most of the control group nurses were also graduated from secondary nursing school (70%). These results were consistent with Mohamed et al. 2014(1) result who revealed that the majority of study subjects in pediatric units were proceeded secondary nursing school. This study indicated that, more than half of them (55%) did not joining any training sessions, these findings supported by Mohamed, et al., 2014(1) who found that, the majority of nurses not joining training courses in NICU and this has the effect on the nurse's knowledge and performance. According to number of training sessions plays a very important role in increasing and modernizing nurses' knowledge beside improving quality of care given to neonates with RDS, regarding the nurses' attendance training courses for caring neonates in NICU. The researcher believes that

attending training sessions by nurses especially in the NICU is crucial to provide quality of nursing care. these findings supported by Mohamed, et al., 2014⁽¹⁾. Regarding to the years of experience in pediatric units, the present study shows that both study and control groups have >7 years. This result approved by Said, 2012⁽⁵⁾ who summarized that most of nurses in study and control groups had > 6 years of experience in pediatric unit.

1. Part-II: Discussion of the Nurses' Knowledge Concerning Management of Patient with RDS:Table (2) demonstrations overall assessment of the study participant's groups prior to perform the education program (pre-test) indicates that the investigation was frustrated in both groups (1.431) before the educational program. There was no significant difference in both groups in overall assessment. This results was supported by Mansi & Aziz 2017⁽⁶⁾;Hammod & Mohammed 2016⁽³⁾ studies. They stated that both groups had equal information on care for children who have respiratory distress syndrome before exposure to an educational program.

Table (3): Explains the comparison of mean differences between the study group and other group knowledge prior due to perform the educational program (pre-test). There are no significant variances in pre-test among the study and control groups (P. value = 0.82) that indicated insufficient knowledge in pre-test for both groups. This result was well-matched with many studies such as Mansi & Aziz, 2017⁽⁶⁾;Hammod & Mohammed, 2016⁽³⁾ studies, who found that no significant differences between the mean of score of the test before the educational program.

2.Part- III: Discussion of the Effectiveness of Educational Program on Nurses Knowledge Concerning Management of Patient with RDS for study and Control Groups:

Table (4) Demonstration overall assessment of the study participants (study and control groups) after perform the education program (post-test). This table reveals that the study group participants were passed assessment (1.9) mean of score. While, the control group had failed assessment (1.44) mean of score. This results agree with study of Mohamed, et al. 2014⁽¹⁾ and Hammod & Mohammed, 2016⁽³⁾ in their studies.

Table (5) Found that there was a highly significant difference (HS) with p-value (0.001) in post-test for the study group. This result was agreed with study of Mohamed, et al., 2014⁽¹⁾.

Table (6): Demonstrates variance mean differences between the pre-test and post-test scores for the study and control groups. This table seems highly significant differences between pairs groups at p-value (0.001). This table estimation at (0.01) level, which demonstrates the significant contrast amongst pre and post test scores. This result satisfied Mohamed et al. 2014⁽¹⁾ result, there was huge contrast amongst prior and then afterward mediations evaluation scores which shows that those nursing intercessions on respiratory distress were effective.

Part-IV: Discussion of Associations between Nurses Knowledge of Study Group at Post-test and their Demographic Data:

Tables (7,8) Concerning result related to associations between posttest and demographic data. The present study reveals that there was no significant association between post-test and demographic data among the study group related to (gender, age,levels of education, years of experience, training sessions and number of training sessions). These results supported by Mohammed 2016⁽²⁾ indicated that no significant difference was there between demographic data and post-test.

Table (7) demonstrates no factual contrasts relationship between nurse's knowledge and gender orientation (p value - 0.787) this outcome strengthen by (Mohammed 2016), also training sessions shows no significant association among those who took training courses and who did not receive training at (P-value = 0.79) with nurse's knowledge.

Table (8) demonstrate that no measurable contrasts relationship between nurse's knowledge and age (p value=0.866). This outcome reinforces by Mohammed 2016⁽²⁾ who demonstrated that there was no noteworthy connection between nurse's learning and age. In regarding to age/year, there is no significant association at (p-value = 0.866), This result reveals that the scientific abilities in learning capabilities, which can be affected with advanced age. When age is increased the perception and holding a knowledge may be decreased. There were no significant association between post-test nurse's knowledge and their level of education at p-value (0,47). These findings disagreed with the study of Mohamed, et al., 2014⁽¹⁾. Regarding the years of experience, the present study showed that no huge relationship between years of experience and nurses knowledge at the study group (p-value 0.391). This result was agreed with Babeker and Elrufaie 2015⁽¹¹⁾. In addition, the number of training sessions of the study sample shows no significant association, (P-value = 0.942) as found by Mohamed, et al., 2014⁽¹⁾ that the majority are those who do not have a training sessions in the study group.

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