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Abstract

Childbirth is an anxiety-provoking event in a man's life. Therefore, strategies to decrease paternal anxiety during childbirth are necessary. This study determined the effects of music and satisfaction of first-time Filipino fathers during childbirth. In the study, a prospective quasi-experimental design was utilized. Ninety-eight purposive samples of first-time fathers were included in the study, 50 were allocated in the experimental group (music group) and 48 in the control group (nonmusic group) during the months of August to October 2013. Paternal anxiety and satisfaction were measured using the State Trait Anxiety Inventory and the Visual Analogue Scale for Satisfaction, respectively. Results revealed that the first-time fathers in the experimental group had lower State Trait Anxiety Inventory scores ($p < .05$) and higher Visual Analogue Scale for Satisfaction scores ($p < .05$) than those in the control group. Findings of the study provide substantial evidence to support the use of music in reducing anxiety and promoting satisfaction among first-time fathers during childbirth.

Keywords

anxiety, childbirth experience, client satisfaction, experimental design, men's health, music

Introduction

Childbirth can be an anxiety provoking event in a man's life (Bradley, Slade, & Leviston, 2008; Dellman, 2004; Labrague, Carino, Catap, & Uy, 2013; Sapountzi-Krepia et al., 2010). Paternal anxiety is defined as a state of uneasiness or apprehension resulting from the anticipation of a real or perceived threatening event or situation (Spielberger, 2010). This state commonly occurs in 13% to 80% of fathers in anticipation of the childbirth of their partner (Eriksson, Westman, & Hamberg, 2006; Szeverenyi, Poka, Hetey, & Torok, 1998). Although considered as a common occurrence during childbirth, high levels of anxiety may affect a man's ability to be supportive, cause him to view the birth negatively, and prevent early bonding with their child (Hanson, Hunter, Bormann, & Sobo, 2009; Johnson, 2002; Lupton & Barclay, 1997). Strategies to decrease paternal anxiety during childbirth are therefore recommended.

Background

Becoming a father has been identified as a significant, yet a critical period in a man's life. Childbirth in particular generally evokes positive feelings, such as happiness, joy,

and excitement; however, a majority of the first-time fathers experienced feelings of psychological distress, such as nervousness, fear, and restlessness (Bradley et al., 2008; Dellman, 2004; Labrague, Carino, et al., 2013; Sapountzi-Krepia et al., 2010). A father's participation in childbirth has also been associated with an intense and unexpected emotional response called anxiety (Dermott, 2008; Hallgren, Kihlgren, Forslin, & Norberg, 1999). Anxiety, which is defined as a complex psychobiological process refers to a sequence of cognitive, affective, physiological, and behavioral events (Spielberger, 2010) and commonly occurs among first-time fathers (Labrague, Carino, et al., 2013). Anxiety during childbirth is thought to be related to fear for the safety of the mother and child, the partner's pain, a lack of knowledge about the birth process, the risks of interventions such as operative delivery, limited finances, and the inability to be a good father

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(Eriksson et al., 2006; Hanson et al., 2009). Literature suggests that the prevalence of anxiety and the fear of childbirth in first-time fathers range from 13% to 80% (Eriksson et al., 2006; Szeverenyi, Poka, Hetey, & Torok, 1998).

While expected and common during childbirth, paternal anxiety may affect a father's ability to be emotionally and physically supportive to his partner and affect the ability to assume a fatherhood role during this vulnerable time of transition (Hanson et al., 2009). High levels of anxiety during childbirth restrict men to anticipate in the birth positively and limit their ability to enjoy the overall childbirth experience. In addition, paternal anxiety may also have an impact in the father-child bonding process (Johnson, 2002). This could prevent men from developing a relationship with their children after birth (Lupton & Barclay, 1997). Furthermore, the anxiety that fathers relate to childbirth and other negative experiences was identified to be associated with depression after birth (Bradley et al., 2008). In light of the numerous unfavorable effects of paternal anxiety, it is imperative that interventions to reduce anxiety be explored to lessen expectant fathers' psychological distress during labor and childbirth.

Despite the potentially serious impact of high levels of anxiety on expectant fathers, little has been researched regarding the management of anxiety in first-time fathers who are known to be vulnerable to psychological distress during childbirth. In the review of the literature conducted by Hanson et al. (2009), noted that there is a paucity of research that addresses strategies and interventions to decrease and reduce paternal anxiety and fears. Some fathers stated that having a relaxed atmosphere gave them the opportunity to share their fears and concerns (Friedewald, Fletcher, & Fairbairn, 2005). In a more recent study conducted by Hunter et al. (2009), *mantram* repetition—a complementary, spiritually based, portable practice of silently repeating a meaningful word or phrase—has been reported to be effective in lowering levels of perceived stress and anxiety in new fathers. Childbirth education programs have also been proven to be effective in reducing paternal anxiety (Premberg & Lundgren, 2006), although the majority of fathers felt that their participation was a secondary event (Kunjappy-Clifton, 2007). It is worth noting that most of the interventions available provides inadequate empirical evidence for managing anxiety among expectant fathers. Given this drawback, it is imperative that an empirically based nonpharmacologic approach be developed and tested. Music may be an acceptable method in which to elicit a positive response to anxiety and satisfaction in first-time fathers.

Music is the combination of sounds that produce certain effects. These effects are made by voices or instruments, which, when arranged and produced, can create pleasant or unpleasant noises. Human beings can be influenced by music, which may aid in the physiological, psychological,

and emotional integration of individual treatments for an illness or disability (Munro & Mount, 1978) and has been tested as an adjunct intervention in nursing practice. For centuries, music has been used to treat pain and induce relaxation by a variety of populations in diverse settings. Music has been scientifically tested to be effective in reducing anxiety and inducing relaxation by decreasing the activity of the sympathetic nervous system (Boso, Politi, Barale, & Emanuele, 2006; Nilsson, 2008). Listening to music also lowers serum levels of epinephrine, which causes deep relaxation and produces a calming effect (Irwin, Thompson, Miller, Gillin, & Ziegler, 1999). Similarly, music is believed to elevate the stress threshold, harmonize one's inner processes, helps patients attain an advanced state of relaxation, and reduces stressful situations by decreasing cortisol release and, in turn, reduces anxiety and promotes overall relaxation (Khalfa, Bella, Roy, Peretz, & Lupien, 2003; Sung, Chang, & Lee, 2010). Music changes the interaction of the thalamus and the reticular activating system while effecting emotions and certain autonomic functions, such as blood pressure, heart rate, and respiration (Boso et al., 2006). In addition, music can facilitate feelings of physical and mental relaxation by masking environmental noises and refocusing an individual's attention on a more pleasant emotional state (Koch, Dain, Ayoub, & Rosenbaum, 1998).

Empirical evidences have indicated that music is an effective intervention in reducing anxiety in surgical patients (Labrague & McEnroe-Petitte, 2014; Nilsson, 2008), parturient women (Labrague, Rosales, Rosales, & Fiel, 2013; Phumdoung & Good, 2003), and older adults (Lai & Good, 2005; Sung et al., 2010). It has also been proven to be successful in decreasing anxiety in varied clinical settings, such as oncology, pediatrics, maternal care, intensive care, geriatric, surgery and procedural areas (Labrague & McEnroe-Petitte, 2014; Pittman & Kridli, 2011; Sung et al., 2010). An extensive review of related literature identified that music, as an intervention to reduce anxiety in first-time fathers during childbirth, has never been previously investigated across countries. Furthermore, the review of the literature offers a scant amount of information about the concept of anxiety in first-time fathers as well as how to manage their responses. For this study, it was hypothesized that expectant fathers receiving music intervention would report optimal anxiety reduction and high satisfaction during labor and birth of their wives or partners than those subjects who did not receive music intervention.

Filipino Fathers' Presence During Childbirth

In recent years, men's presence during childbirth has gained global acceptance. For instance, in Western countries, 90% to 95% of fathers are with their partners during

labor and delivery of their children (World Health Organization, 2007). However, in the Philippines, a father's presence during this remarkable event of fatherhood remains unpopular and unaccepted (Labrague Carino, et al., 2013). This holds true especially in public hospitals where fathers are not permitted to be present during childbirth as per hospital policy. These policies and practices are rooted primarily from sociocultural influences and traditional views on childbirth. This could, in some ways, cause feelings of intense anxiety in first-time fathers as they will be left unaware of the progress and development of the childbirth process (Hanson et al., 2009). An investigation into the value of music as a management of paternal anxiety and satisfaction among first-time fathers is therefore warranted.

Research Questions

This study was designed to assist with determination of effects of music on anxiety and satisfaction in first-time Filipino fathers during childbirth. Specifically, this study aimed to answer the following research questions:

- (a) Is there a significant difference on the anxiety levels of the music and nonmusic group after exposure to music?
- (b) Is there a significant difference on the level of satisfaction with the childbirth experience of the music and nonmusic group after exposure to music?

Method

Research Design

This study was a prospective pretest–posttest quasi-experimental design.

Setting and Sample

A convenience sampling was used in this study to recruit 98 eligible first-time fathers from a 150 bed capacity government hospital in the Philippines during the months of August to October 2013. To be eligible in the study, the subjects were required to (1) have no hearing difficulties, (2) be at least 18 years or older, (3) free from preexisting medical problems, such as cardiac disease, hypertension, and anxiety as determined by the resident physician of the facility prior to participation in the study, (4) agreed to and have signed a consent form, and (5) must be a first-time father to be.

To determine the sample size, the alpha was set at 0.05, effect size of 0.5 with a power level of 0.7, and the minimum estimated sample size was 39. In a 3-month period, a total of 102 subjects were originally recruited to

participate in the study. However, four subjects withdrew for the following reasons: two left the waiting room and two laboring women were referred to a higher level for maternal care. Finally, 98 subjects were included in the study, wherein 48 first-time fathers were allocated to the control group (nonmusic group) and 50 were assigned in the experimental group (music group).

Ethical Considerations

The ethical committee of Samar Provincial Hospital granted the approval of the study. The principal researcher sought the permission of the hospital director and chief nursing officer of the hospital prior to actually conducting the study. Consent forms from the subjects were secured on approval to participate, and the subjects were told that they can withdraw from the study at any time.

Music Selection

Previous studies have tested and proven the physiological and psychological effects of soothing and calming music (Lai & Good, 2005; Labrague, Rosales, et al., 2013; Labrague & McEnroe-Petitte, 2014; Nilsson, 2008; Sung et al., 2010). In the present study, the type of music used consisted of classical (Claude Debussy, Adagio for Strings, Pachelbel's Canon), country (Teardrops on My Guitar, Lovestory), and nature sounds having a slow and flowing tempo. Previous studies suggested that music, which can reduce anxiety must have the following characteristics: (1) slow and flowing music, (2) approximately 60 to 80 beats per minute, (3) nonlyrical, (4) consists of predominantly low notes, (5) comprised mostly of strings with minimal brass or percussion instruments, (6) and has a maximum volume level at 60 decibels (dB) (Cepeda, Carr, Lau, & Alvarez, 2006; Labrague & McEnroe-Petitte, 2014; Nilsson, 2008). Preselected music was recorded in five multimedia player 3 (MP3) with accompanying headphones. Subjects chose the music they liked on the lists of 500 prerecorded music selections.

Measurement

Anxiety. Paternal anxiety was measured using the scale called the State Trait Anxiety Inventory (S-STAI). It is a 20-item report instrument developed by Spielberger (2010) and was designed to evaluate a patients' feeling of apprehension, tension, nervousness, and worry. First-time fathers rated themselves on the scale of 1 (*not at all*) to 4 (*very much so*) the intensity of the feelings that they were being asked about. The instrument has been extensively used with a high level of reliability and validity. The anxiety score can range from 20 to 80 with higher scores indicating a higher level of anxiety. The STAI was

translated into the country's language, which is Tagalog, using the American-English version through a forward and back translation process. The translated version was discussed with a group of experts to determine content validity. Previous studies achieved an internal consistency with Cronbach's alphas of 0.91 (Spielberger, 2010) and 0.92 (Labrague & McEnroe-Petitte, 2014). Internal consistency was valued in the present study being 0.92, which is high compared with previous studies.

Satisfaction. Satisfaction with the childbirth experience was measured with the Visual Analogue Scale for Satisfaction (VASS). It is a 10-cm horizontal line marked by vertical lines at 1-cm intervals that construct the scale. First-time fathers were asked to indicate their level of satisfaction from 0 (*not satisfied*) to 10 (*very satisfied*) by marking the correct place on the scale. The higher the number of centimeters indicated experiencing a higher level of satisfaction. This tool was used 2 hours postpartum. Internal consistency of the VASS was reported to be 0.82.

Data Analysis

The data were coded, entered into a computerized database and were analyzed using the Statistical Package for the Social Sciences (SPSS Version 19). Descriptive statistics such as the mean, frequency, and standard deviation were used to quantify the participants' demographic profile. To test for the equivalence of the two groups, *t* test, chi-square, and Fisher's exact test were used. Paired *t* test was used to examine any significant difference between the pre- and posttest S-STAI for each group. To compare the control and experimental group, the unpaired *t* test was used. The level of significance was set at $p < .05$.

Intervention Procedure

The music intervention took place in the fathers' waiting room and started when their partner/wife was admitted into the delivery room. As per hospital policy, a laboring woman would be transferred from the maternal ward into the labor room once the cervical dilatation reaches 4 cm. During this time, no one is allowed to be present in the labor and delivery room. Fathers anticipating for their wives' delivery are assigned to the fathers' waiting room of the hospital.

Eligible fathers who agreed to participate in the study, signed the consent form, and were assigned to either the control or experimental group by cohort. For instance, fathers who were waiting for the delivery of their partners/wives on the first week were assigned in the control group and on the following week, fathers whose partners/wives were waiting for the delivery, were assigned in the

experimental group. See Figure 1 for the flow diagram through the phases of the trial.

In most studies conducted, listening durations ranged from 15 to 40 minutes, however, a minimum of 15 to 20 minutes of listening to music was reported to be effective in minimizing anxiety in many studies (Labrague & McEnroe-Petitte, 2014; Pittman & Kridli, 2011). In the present study, the experimental group received and was exposed to music intervention for 30 minutes while waiting for the delivery of their partner/wife, while the control group received standard nursing care. Standard nursing care in this study refers to giving of information and timely updates to father-to-be about the status of the wife's/partner's labor progress.

Paternal anxiety, with the use of the STAI, was obtained before (Time 1) and after 30 minutes (Time 2) of exposure to music in the experimental group and again 30 minutes before and after the usual in the control group. Satisfaction with the childbirth experience using the VASS was obtained 2 hours after the delivery of the baby. Headphones, instead of speakers, were used to deliver the music assisting to eliminate the extra environmental noises, which could heighten the subject's anxiety or cause distractions. In most studies conducted, headphones were used to provide music to the subjects (Labrague & McEnroe-Petitte, 2014; Nilsson, 2008). Additionally, to avoid unnecessary disturbances in the fathers' waiting rooms, the researchers assigned the subjects by group either into the control group or into experimental group on a weekly basis.

Results

Demographic Characteristics

Ninety-eight first-time fathers were recruited to participate in this study. Fifty first-time fathers were allocated in the music group and 48 first-time fathers were assigned in the control group. The mean age was 25.1 years ($SD = 3.62$) and 24.31 years ($SD = 3.89$) in the control and experimental groups, respectively. Statistical tests identified no significant difference in both groups in their demographic characteristics such as age, marital status, education, and religion (Table 1).

Effects of Music on Anxiety Index

Baseline scores of the two groups on the STAI were compared using inferential statistics (Table 2). Results of two independent *t* tests indicated that the two groups were not significantly different on STAI scores ($t = 0.366$).

With the use of the dependent *t* test (one-tailed test), STAI scores of both groups were examined separately for any changes before and after exposure to the music

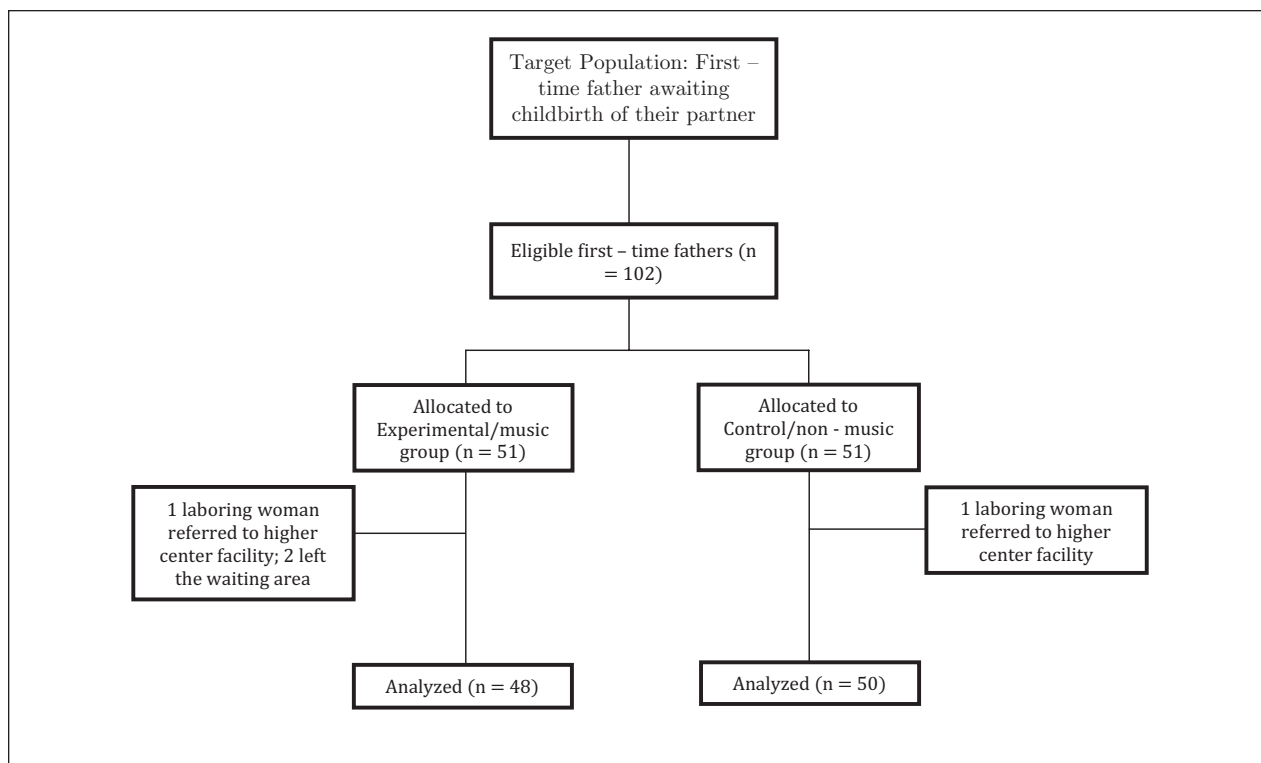


Figure 1. Flow diagram of the trial.

Table 1. Demographics of the First-Time Fathers.

Variable	Control group (n = 48)	Experimental group (n = 50)	<i>t</i> / χ^2	<i>p</i>
Age in years, <i>M</i> (<i>SD</i>)	25.1 (3.6)	24.31 (3.9)	1.04	.330
Marital status, <i>n</i> (%)				
Single	17 (34)	13 (27.1)	0.55	.457
Married	33 (66)	35 (72.9)		
Education, <i>n</i> (%)				
Primary	4 (8)	5 (10.4)	0.65	.721
Secondary	17 (34)	19 (39.9)		
Tertiary	29 (58)	24 (50)		
Religion, <i>n</i> (%)				
Roman Catholic	48 (96)	45 (93.8)	0.26	.613
Muslim	2 (4)	3 (6.3)		

intervention (Table 3). Statistically, significant differences in the STAI scores in the experimental group ($t = 93.90, p < 0.05$) and control group ($t = -52.36, p < 0.05$) were noted at Time 2.

To determine whether the music intervention has significant effect on anxiety scores, two independent *t* test analyses were conducted to compare the two groups after ensuring homogeneity of the samples used (Table 4). First-time fathers in the experimental group had lower

STAI scores ($t = 16.227, p < 0.05$) than the scores of the control group.

Childbirth Satisfaction

To compare satisfaction with the childbirth experience in both groups, independent *t* test analysis was conducted (Table 4). First-time fathers in the experimental group reported high satisfaction with the labor and childbirth

Table 2. Baseline Data in First-Time Fathers Receiving Music and the Control Group.

Scale	Music group; <i>M</i> ± <i>SD</i>	Nonmusic group; <i>M</i> ± <i>SD</i>	95% confidence interval	<i>t</i>	<i>p</i>
State Trait Anxiety Inventory	40.30 ± 1.74	40.43 ± 2.20	[-0.83, 0.57]	0.37	.714

Table 3. Means, Standard Deviations, *t* Values, and *p* Values After Music Intervention.

Scale	Music group		<i>t</i>	<i>p</i>	Nonmusic group		<i>t</i>	<i>p</i>
	Time 1; <i>M</i> ± <i>SD</i>	Time 2 <i>M</i> ± <i>SD</i>			Time 1; <i>M</i> ± <i>SD</i>	Time 2; <i>M</i> ± <i>SD</i>		
State Trait Anxiety Inventory	40.30 ± 1.74	36.82 ± 2.09	9.39	<0.05*	40.43 ± 2.20	43.12 ± 1.73	-5.24	<0.05*

**p* < .05.

Table 4. Difference on the Posttest Scores of the Control and Experimental Group After Music Intervention.

Scale	Music group; <i>M</i> ± <i>SD</i>	Nonmusic group <i>M</i> ± <i>SD</i>	95% confidence interval	<i>t</i>	<i>p</i>
State Trait Anxiety Inventory	36.82 ± 2.09	43.12 ± 1.73	[-7.07, -5.53]	16.23	<0.05*
Visual Analogue Scale for Satisfaction	8.94 ± 0.56	6.45 ± 1.07	[2.15, 2.83]	14.53	<0.05*

**p* < .05.

experience ($t = 14.529$, $p < 0.05$) than those in the nonmusic group.

Discussion

Most fathers awaiting childbirth of their partner or wife experience psychological distress, which restricts them to enjoy the childbirth experience positively (Bradley et al., 2008; Dellman, 2004; Labrague, Carino, et al., 2013; Sapountzi-Krepia et al., 2010). Developing interventions to reduce anxiety based on empirical evidence is important to make this transition to fatherhood as positive as possible. Given this background, this study was conducted to determine the effects of music intervention of anxiety levels and satisfaction in first-time fathers during labor and delivery of their partner or wife.

Results of this study indicated that 30 minutes of music intervention provided by the researcher had a significant effect on anxiety scores in first-time Filipino fathers during their partners' labor and delivery. First-time fathers allocated in the music group reported a significant decrease in S-STAI scores from Time 1 to Time 2 after listening to music. Conversely, anxiety scores in the nonmusic group increased significantly at period/Time 2. Because of the absence of similar studies, the comparison of our results with previous research was not possible. Reduction in the anxiety scores may be attributed to the anxiolytic effects of music.

In analysis of satisfaction with music intervention, the findings indicated that first-time Filipino fathers who were exposed to 30 minutes of music intervention reported a high level of satisfaction with the labor and childbirth experience. Satisfaction with the experience of childbirth is determined by their ability to be emotionally and physically supportive of their partner or wife (Hanson et al., 2009), however high level of paternal anxiety, when present, may hamper their ability to assume the paternal role during labor and birth (Johnson, 2002, Lupton & Barclay 1997). This identifies a need for nurses to provide anxiety reduction interventions to optimize and reduce first-time fathers' experiences of discomfort and unpleasant symptoms while optimizing nursing care. In light of the increasing costs of health care around the world, providing an approach that is inexpensive, noninvasive, and easy to administer such as music intervention is a positive choice. This strategy may be considered useful in health care settings (like in the Philippines and some other Asian and Arabic countries) where expectant fathers are not allowed to be present in the birthing rooms.

For centuries, music has been used to treat pain and induce relaxation in diverse populations and in varied clinical settings such as oncology, pediatrics, obstetrics, intensive care, geriatric, surgery, and special procedure-focused areas (Lai & Good, 2005; Labrague & McEnroe-Petite, 2014; Labrague, Rosales, et al., 2013; Nilsson, 2008; Phumdoung & Good, 2003; Pittman & Kridli,

2011; Sung et al., 2010). This study was the first to determine the value of music in anxiety reduction in first-time fathers. The findings contribute to the development of an empirical approach in reducing paternal anxiety that could be effectively implemented. In addition, the existing strategies used to decrease paternal anxiety during childbirth such as giving childbirth updates and support, may be supported by adding music to assist with the father's interventions during the birth process. This research adds significantly to the existing body of literature regarding the value of music.

Limitations

Although this study has yielded a finding that offers valuable clinical implications, nevertheless it has some limitations that need to be addressed. One important limitation of the study was the lack of random assignment which may pose potential selection bias in assigning subjects. The researchers cannot make a generalization as to applicability of the music in reducing paternal anxiety since study subject consisted only of Filipino fathers and were taken from a single hospital facility from one country. Therefore, it is suggested that future studies using first-time fathers from other cultures or race may be conducted to ascertain the therapeutic effects in cultural context. Authors could not rule the possibility of the Hawthorne effect considering that the subjects were informed of the research protocol. Potential stressors for fathers like their desires to have a baby (pregnancy wantedness) were not considered in this study. This could also contribute to their anxiety level during childbirth. The use of prerecorded music may have also affected the therapeutic effect of music on the anxiety levels as previous studies suggest that for the music to be beneficial in reducing stress and inducing relaxation it must be the preference of the subject. The use of headphones rather than speakers may also have caused different listening experiences as sound from the waiting room will be blocked that may affect the effects of the music intervention.

Conclusion

Nurses play an important role in facilitating positive childbirth experiences of first-time fathers by creating an environment that maintains relaxation and promotes overall well-being. Findings of this study have provided substantial empirical evidence to support the use of music as a strategy in reducing anxiety and promoting satisfaction in first-time fathers. Hospital administrators may consider introduction of music in the father's waiting room as a means of managing paternal anxiety related to the events of labor and childbirth. As an additional modality in nursing care, music intervention may be incorporated

as part of the usual nursing care routine by maternity nurses when caring for first-time father during the childbirth process.

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