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Annexure – I

Ethical clearance certificate from the Institute

INSTITUTIONAL HUMAN ETHICS COMMITTEE

Avinashilingam

Institute for Home Science and Higher Education for Women
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956) Re-accredited with 'A++' Grade by NAAC.
Recognised by UGC Under Section 12 B
Coimbatore-641 043, Tamil Nadu, India

18th April 2022

To
Ms. Sharanoor Hussain
Department of Human Development
Avinashilingam Institute for Home Science and
Higher Education for Women
Coimbatore – 641 043

Dear Sharanoor Hussain,

Ref: Your proposal No. IHEC/21-22/HD-26 entitled "Effectiveness of Music and Meditation on Psychological Status of Pregnant Mothers" resubmitted for approval to IHEC on 18.03.2021.

The Institutional Human Ethics Committee of our University hereby grants approval to your research proposal No. IHEC/21-22/ HD-26 entitled "Effectiveness of Music and Meditation on Psychological Status of Pregnant Mothers" resubmitted by you. The Approval number for the same is AUW/IHEC/HD-21-22/XPD-26.

We wish you all the best in your research endeavours.

Regards,

V. Uma Mageshwari

Dr.S.Uma Mageshwari
Member Secretary

Institutional Human Ethics Committee

Annexure - II

Ethical clearance certificate from the study area

GOVERNMENT OF ASSAM

Office of the Institutional Ethics Committee (H)
Lakhimpur Medical College & Hospital
North Lakhimpur, Assam, PIN: 787051

IEC (H)No: *LMC/IEC-21/12/01*	*Dated: the 10th June,2022*
Protocol title: *"Effectiveness of Music and Meditation on Psychological Status of Pregnant Mothers"*	
Principal Investigator: **Name:** *Sharanoor Hussain , PhD Scholar* **Email:**	**Contact No:** *8822667268*
Name & Address of Institution: *Deptt of Human Development ,ADU,Coimbator,641043*	
Type of Review:	***Revised review***
Date of Review (dd/mm/yy): the 10th June,2022 **Date of Previous Review (if revised application):** *08/12/2021*	
Decision of the IEC(H):	***Recommended***
Suggestions / Remarks :	
Recommended for a period of :	***As mentioned in the Protocol***

Please note:

1. Inform IEC (H) in case of any change of investigator, study procedure, site.
2. Members of IEC (H) have right to monitor the trial with prior intimation.
3. Inform IEC (H) immediately in case of any adverse events (A/E) and serious adverse events.
4. This permission is only for period mentioned above. Annual report to be submitted to IEC (H).

Sign:
Designation:
Member Secretary
Institutional Ethics Committee (H)
Lakhimpur Medical College and Hospital
North Lakhimpur, Assam

Annexure – III

General profile questionnaire

Socio- demographic profile of the selected respondents

I. Personal Information:

Age: _____ Husband's age: _____

Education: _____

Religion: _____

Occupation: _____

Blood Group: _____

Do you Practice meditation?

Yes ☐ No ☐ Sometimes ☐

Are you practicing listening to music every day?

Yes ☐ No ☐ Sometimes ☐

If yes, what kind of music do you listen regularly?

Natural Music ☐ Instrumental Music ☐ Folk Music ☐

Garbha Mantra ☐ Indian Classical Music ☐ Lullabies ☐ Filmy songs ☐

II. Family Background:

Monthly income: _____

Family type: Nuclear ☐ Joint ☐

III. Living Condition:

Area of living: Rural ☐ Urban ☐ Semi-urban ☐

IV. Type of pregnancy: Planned ☐ Unplanned ☐

V. Stage of pregnancy: 1st Trimester ☐ 2nd Trimester ☐ 3rd Trimester ☐

VI. Mode of pregnancy: Natural ☐ IUI ☐ IVF ☐

VII. Number of pregnancy: First ☐ Second ☐ Third ☐ Fourth ☐

VIII. Phone number:

Annexure – IV

Pregnancy Psychological Status Scale (English Version)

Pregnancy Psychological Status Scale (PPSS)

Instructions:

Read each statement carefully and tick √ any one option you find the most appropriate. Don't spend too much of time on any statement. All the answers should be attended.

Note: The information would be kept confidential and will be used for the research purpose only.

Sl No.	Statements	Often	Sometimes	Rarely	Never
1	I feel content being pregnant.				
2	I was feeling uncertain when the doctors confirmed my pregnancy.				
3	Maintaining close relationships with family members gives me pleasure.				
4	I am concerned about my age and its effect on my pregnancy.				
5	My appetite is very high.				
6	I am embarrassed about my physical structure.				
7	I am irritated about the gossip.				
8	I am waiting for the delivery to get over soon.				
9	I am maintaining good relationships with relatives and friends.				
10	I am having giddiness.				
11	My illness will not affect my mental health.				
12	I am concerned about my morning sickness.				
13	I am always energetic.				
14	I am anxious to inform others that I am pregnant.				
15	I like to invite people for a baby shower.				
16	I am upset about delay in household work due to pregnancy.				
17	I feel confident that my partner will be a good parent.				
18	I have mixed feelings.				
19	I am upset about my weight gain.				
20	I would like to maintain relationships with others.				
21	I like to be left alone.				
22	I am fresh when I get up in the morning				
23	I am worried about taking care of my children.				
24	Because of my pregnancy, I am not able to socialize.				
25	I become easily annoyed or irritated nowadays.				
26	I am concerned about my in-laws' domination.				
27	I am worried about my Gestational diabetes.				
28	I am worried about my stretch marks.				
29	I am very positive because of my family member's support.				
30	I am concerned about the financial expenses of the delivery.				
31	I feel confident imagining myself as a mother.				
32	I feel nervous thinking about labour pain and delivery,				
33	I often feel nervous and stressed.				
34	I am able to manage the daily household chores				
35	I feel less attractive because of its low sexual desire.				
36	I feel overloaded.				
37	I enjoy the company of other people.				
38	I have difficulty in sleeping.				
39	I am happy about my baby's movements.				
40	I am worried about my unborn baby's health.				

Annexure – V

Pregnancy Psychological Status Scale (Assamese version)

নির্বাচিত উত্তৰদাতাসকলৰ সামাজিক-জনগাঁথনি প্ৰ'ফাইল

১) বক্তিগত তথ্য

বয়স: _____ স্বামীৰ বয়স _____

শিক্ষা: _____

ধর্ম: _____

বৃত্তি: _____

তেজৰ গোট: _____

আপুনি যোগাসন কৰে নেকি? _____

আপুনি প্রতিদিনে গর্ভধাৰণৰ লগত জড়িত সংগীত শুনাৰ অনুশীলন কৰি আছে নেকি? হয় ☐ নহয় ☐

২) পাৰিবাৰিক তথ্য

মহিলি আয়: _____

পৰিয়ালৰ প্রকাৰ: একক পৰিয়াল ☐ যৌথ পৰিয়াল ☐

৩) জীৱন-ধাৰণৰ প্রণালী

আৱাসস্থলী: গাওঁ ☐ নগৰ/চহৰ ☐ অর্ধ নগৰীয় ☐

৪) গর্ভধাৰণৰ প্রকাৰ: পৰিকল্পিত ☐ অপৰিকল্পিত ☐

৫) গর্ভধাৰণৰ স্তৰ: ১ম তিনিমাহ ☐ ২য় তিনিমাহ ☐ ৩য় তিনিমাহ ☐

৬) গর্ভধাৰণৰ পদ্ধতি: স্বাভাৱিক ☐ আই ইউ আই (IUI) ☐ আই ভি এফ (IVF) ☐

৭) কেইবাৰৰ বাবে গর্ভধাৰণ কৰা হৈছে? ১ম ☐ ২য় ☐ ৩য় ☐

৮) ফোন নম্বৰ:

গর্ভৱতী মহিলাৰ মানসিক স্থিতিৰ প্ৰশ্নপ্ৰত্ৰ

নিৰ্দশনা:

তলত উল্লেখিত প্ৰতিটো উক্তি মনোযোগেৰে পঢ়ক আৰু আটাইতকৈ উপযুক্ত অনুভৱ কৰা যোকোনো এটা বিকল্পত টিক (√) চিহ্ন প্ৰদান কৰক। কোনো উক্তিত অত্যধিক সময় ব্যয় নকৰিব। কৃপা কৰি সকলো উত্তৰ প্ৰদান কৰে যেন।

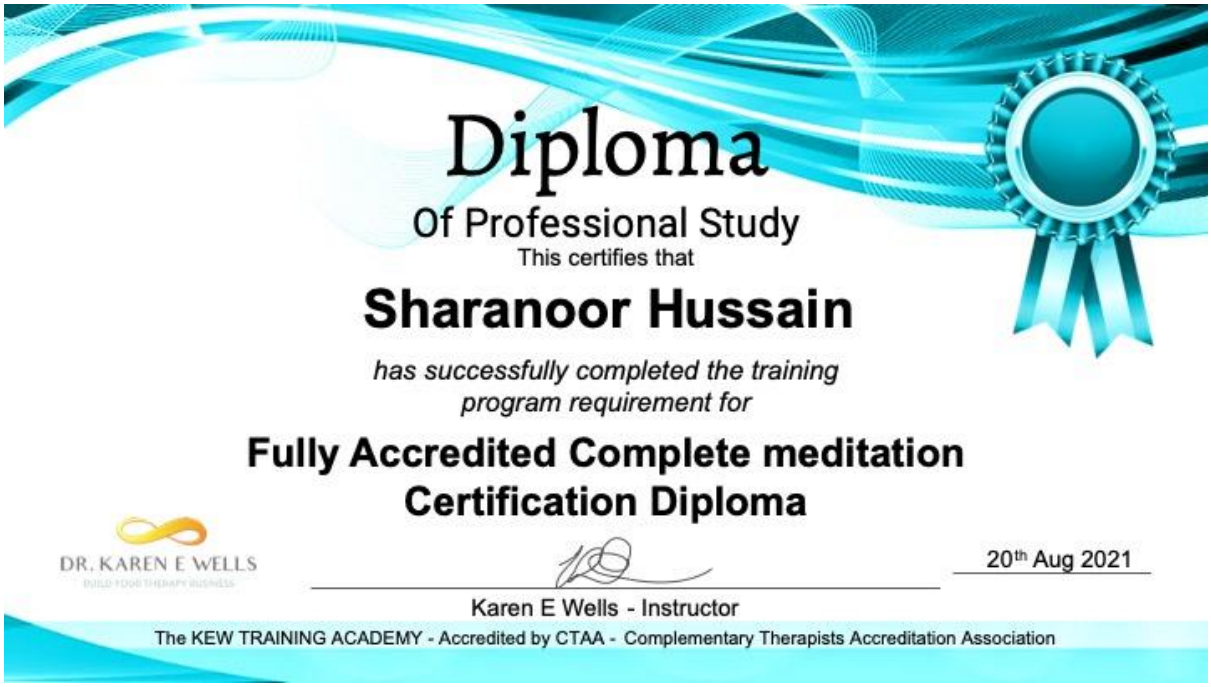
টোকা: সকলো তথ্য গোপনীয় ৰখা হ'ব আৰু কেৱল গৱেষণাৰ উদ্দেশ্য ব্যৱহাৰ কৰা হ'ব।

উক্তি	প্ৰায়ে/সদায়	কেতিয়াবা	খুউব কম	কেতিয়াও নহয়
মই গর্ভৱতী হোৱাত সন্তুষ্ট অনুভৱ কৰো।				
মই মোৰ দৈহিক অৱয়ব্ ৰ বাবে লাজ বোধ কৰো।				
যেতিয়া চিকিৎসকে মোৰ গর্ভধাৰণ নিশ্চিত কৰিছিল মই অবিস্বাস্য অনুভৱ কৰিছিলো।				
পৰিয়ালৰ সৈতে ঘনিষ্ঠ সম্পর্ক বজাই ৰাখি মই আনন্দ পাওঁ।				
মোৰ বহুত বেছি ভোক লাগে।				
আনৰ বদনাম বা পৰচর্চাই মোক বিৰক্তি প্ৰদান কৰে।				
মই আত্মীয় আৰু বন্ধুবৰ্গৰ সৈতে ভাল সম্পর্ক বজাই ৰাখিছোঁ।				
মই মূর্চ্ছাযোৱা অথবা অস্থিৰতা অনুভৱ কৰো।				
মই অনুভৱ কৰো যে মোৰ অসুস্থতাই মোৰ মানসিক স্বাস্থ্যক প্ৰভাৱিত নকৰিব।				
মই মোৰ পুৱাবেলাৰ ৰোগ (বমি হোৱা) ৰ বিষয়ে চিন্তিত।				
মই সদায় উদ্যমী বা প্ৰবলভাৱে সক্ৰিয়।				
মই গর্ভৱতী বুলি আনক জনাবলৈ লাজ অনুভৱ কৰো।				
মোৰ গর্ভধাৰণৰ বাবে ঘৰুৱা কাম-কাজ কৰোঁতে পলম হোৱাত মই মর্মাহত।				
মই মানুহক 'বেবী শ্বাৱাৰ' ৰ বাবে নিমন্ত্রণ কৰি ভাল পাওঁ।				
গর্ভধাৰণৰ সময়ত মিশ্রিত আৱেগৰ অনুভৱ হয়।				
মোৰ ওজন বৃদ্ধিৰ বাবে মই শংকিত।				
মোৰ স্বামী এজন ভাল অভিভাৱক হ'ব বুলি মই আত্মবিশ্বাসী।				
মই অকলশৰীয়াকৈ থাকি ভাল পাওঁ।				
মই মোৰ সন্তানৰ যত্ন লোৱাৰ ক্ষেত্রত চিন্তিত।				
পুৱা শুই উঠি মই সতেজতা অনুভৱ কৰো।				
গর্ভাৱস্থাত হোৱা ডায়েবেটিচ/মধুমেহ ৰোগৰ বাবে মই শংকা অনুভৱ কৰো।				
মোৰ গর্ভধাৰণৰ বাবে মই সামাজিকৰণ বা অন্য লোকৰ সৈতে মিলা-মিছা কৰিবলৈ অসমর্থ।				
মই আজিকালি সহজে বিৰক্ত বা আমনি অনুভৱ কৰো।				
মই আনৰ সৈতে সম্পর্কবোৰ বজাই ৰাখিব বিছাৰো।				
মোক শশুৰ-শাশুৰে কৰা শাসনৰ বাবে মই ভীতিগ্রস্ত।				
মোৰ বয়স আৰু গর্ভাৱস্থাত ইয়াৰ প্ৰভাৱৰ বিষয়ে মই চিন্তিত।				
গর্ভধাৰণৰ সময়ত মোৰ পৰিয়ালৰ লোকৰ সহায়- সহযোগীতাৰ বাবে মই সুখী।				
সন্তান প্ৰসৱৰ অন্তত হোৱা প্ৰসাৰিত চিহ্নৰ (stretch mark) বিষয়ে ভাৱি মই উদ্বিগ্ন।				
মই সন্তান প্ৰসৱৰ সময়ত হোৱা খৰচ-পাতি বা ব্যয়ৰ সম্পর্কে চিন্তিত।				
মই নিজকে এগৰাকী মাতৃ হিচাপে কল্পনা কৰি গৌৰৱবোধ কৰো।				

সন্তান প্রসৱ আৰু এই সময়ত হোৱা যন্ত্রনাৰ বিষয়ে ভাৱি মই শংকিত হওঁ।				
মই প্রায়েই শংকা/ভয় আৰু মানসিক চাপ অনুভৱ কৰো।				
মই দৈনন্দিন ঘৰুৱা কাম-কাজবোৰ সুচাৰুৰূপে পৰিচালনা কৰিবলৈ সক্ষম।				
মই আজিকালি অত্যধিক বোজা অনুভৱ কৰো।				
গর্ভধাৰণৰ ফলত নিম্ন যৌন স্পৃহাৰ বাবে মোৰ কম আকর্ষণীয় অনুভৱ হয়।				
মই সম্পর্কীয় লোক বা অন্য লোকৰ সৈতে সম্পর্ক ৰাখি সুখী অনুভৱ কৰো।				
মই মোৰ গর্ভধাৰণ প্রক্রিয়া সোনকালে শেষ হোৱালৈ অপেক্ষা কৰি আছো।				
মোৰ টোপনি যোৱাত অসুবিধা হয়।				
গর্ভজাত শিশুয়ে মোৰ গর্ভত কৰা লৰচৰ বা চলাচলৰ বাবে মই আনন্দিত।				
মই মোৰ গর্ভজাত শিশুৰ স্বাস্থ্যৰ বিষয়ে চিন্তিত।				

Annexure – VI

Meditation Certification Diploma



Avinashilingam Institute for HomeScience and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD
Re-accredited with A++ Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Appendix L2

(Item No 5 of Check List) Details of Research Publications

Sl. No	Article	Journal	Other Details Vol/No/Page No/ Year	Published in UGC-CARE / Scopus Indexed/ Web of Science
1	Meditation and music intervention for improving pregnancy psychological health.	Yoga-Mimamsa	Vol. 55/Issue-2/Page No. 88-94/ Jul-Dec 2023. Doi:10.4103/ym.ym_34_23	UGC CARE
2	Effectiveness of music intervention on psychological status of pregnant women.	The Indian Journal of Home Science	Vol. 35/Issue-2/Page No. 419-429/ July 2023.	UGC CARE
3	Factors influencing mental and psychological health during pregnancy	The Journal of Research ANGRAU	Vol. 51/Issue-2/ Page No.136-140/April-June 2023 DoI: https://doi.org/10.58537/jorangrau.2023.51.2.15	UGC CARE

*Proof of list of Journals from Internet to be attached along with copies of reprints.

Scholar : Sharanoor Hussain

Supervisor : Dr. Priya M.

13/12/23

Checked By:

12.12.2023

HoD/Dean of Respective School

13/12/23

The scholar Miss. Sharancaar Hussain (19PHHDF003) has published her article in the following journals:

1. Yoga-Mimamsa - is indexed and active in UGC care List Group I from January 2021 to present and
2. The Indian Journal of Home Science - is indexed and active in UGC care List Group I from July 2020 to present.

This may be considered.

14.12.2023

DoI: https://doi.org/10.58537/jorangrau.2023.51.1.15

J. Res. ANGRAU 51 (2) 134-142, 2023

FACTORS INFLUENCING MENTAL AND PSYCHOLOGICAL HEALTH DURING PREGNANCY

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Date of Receipt : 24.2. 2023 Date of Acceptance : 20.5.2023

ABSTRACT

The study aimed to evaluate maternal mental and psychological health throughout the pregnancy based on age, religion, and occupation. In this cross-sectional study, a total of 66 pregnant women from govt. and private hospitals in Coimbatore city who were admitted between December 2019 and January 2020 were selected as respondents.Purposive sampling method was applied to select the samples. A self-constructed tool on Pregnancy Psychological Status Scale (which assesses mental health) was developed and used to collect data from pregnant women. Results revealed that significant differences in mental and psychological health based on religion (p=0.005) and occupation (p<0.001). The overall level of psychological status (Mental health) among Hindu pregnant women was found better as compared to Muslims and Christians. Regarding occupation, housewives reported higher mental and psychological health followed by private and government employees. However, no significant differences could be seen among various age groups of pregnant women.

Keywords: Mental Health, Pregnancy, Psychological Health

INTRODUCTION

Pregnancy is an exceptional period for every woman, which is a particular and complex time with various physical and psychological changes that a pregnant woman experiences during the nine months (Bjelica *et al.,* 2018; Isaacs and Andipatin, 2020). It is a remarkable and vital period in a woman's life because the mother-to-be prepares herself for her new role as a mother(Lindsay, 2019).Thus, this period is generally ûlled with feelings of excitement and happiness; yet, stress, anxiety, and otherundesirable emotions and sentimentscould be seen during pregnancy (Lindsay, 2019). The psychological stress of pregnant mothers is generally believed to influence pregnancy, and it may increase the risk of fetal death in different ways (Relier, 2001). Stress during the prenatal period has also been shown to impair the regulation of the hypothalamic-pituitary-adrenal axis, and likely the effects of stress on birth

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outcomes are a consequence of the fetus being exposed to higher levels of cortisol (Weinstock, 2005).

Most of the prevailing studies showed that if the mother during pregnancy is anxious, worried, and distressful, the probability of the newborn weight loss and encountering unpleased results after birth such as emotional problems and the symptoms of hyperactivity disorders as well as problems in cognitive development will increase (Parcells, 2010).

Nayak *et al*. (2015) reported that physical changes could be seen throughout the pregnancy along with mood swings and other psychological or emotional reactions. The study added that during the advanced stage or third trimester of pregnancy, women experience various psychological problems, namely depression, somatization, anger hostility, interpersonal sensitivity, phobic anxiety, sleep disturbance, appetite, psychoticism etc.; these symptoms may relate to their current age and duration of pregnancy.

Based on the existing evidence,stress, depression, or anxiety in pregnancy has been associated with increased obstetric complications, including stillbirth and low birth weight infants(Dole, 2003; Maina *et al*., 2008). Pregnancy is a crucial time to care for the mothers' minds and mental attitudes (Donegan, 2015). Hence,the researcher decided to conduct a pilot study to evaluate maternal mental health and psychological status. Thus, the study aimed to assess mental and psychological health of the pregnant women; to analyze mental and psychological health of pregnant women based on age; to examine mental and psychological health of pregnant women based on religion and to know the mental and psychological health of pregnant women based and occupation.

MATERIAL AND METHODS

Area of the study and study sample

This pilot study was conducted between December 2019 and January 2020 in Coimbatore city of Tamil Nadu. The target groups of this study were pregnant women from various govt. and private hospitals. A total of 66 pregnant women were selected through the purposive sampling method. Prior permission/consent was obtained frompregnant women, theirfamilies,and the three hospitals of two Primary Health Centres (PHCs) and one private hospital. Inclusion and exclusion criteria were applied for sample selection; inclusion criteria involved pregnant women of the first trimester, between the age group of 18-40 years, and first/second/third pregnancies. In exclusion criteria, the points considered wereunwillingness to participate, below 18 years and above 40 years.

The data were collected with the help of a self-constructed tool named 'Pregnancy Psychological Status Scale'.This tool consisted of two parts: a sociodemographic profile and Pregnancy Psychological Status Scale(mental health). The socio-demographic profile was specially designed to gather information about sample characteristics and variables: name, age, education, income, religion, occupation, types of family, size of family, stages of pregnancy, etc.

Procedure of the study and research design

The Pregnancy Psychological Status Scale (PPSS) was constructed to measure the mental health and psychological status of pregnant women (Fig. 1). It was designed by referring to

various available tools based on mental health and psychological conditions during pregnancy. The tool consisted of 50 items in seven dimensions, namely anxiety (8 items), stress (10 items), depression (7 items), emotions (7 items), socialization (5 items), personal relationships (7 items), and in-law-family relationships (6 items). Item analysis and analyses of internal consistency, parallel form reliability, content validity, construct validity and criterion validity were performed to meet out standardization requirements. The alpha Cronbach value for reliability is 0.71 which got the accepted value to measure the same. Out of 50 items, 12 are true-keyed,and the rest 38 are false-keyed. A5-point Likert scale was adopted to respond to each statement: Always, Often, Sometimes, Rarely, and Never and the scoring for true-keyed items were 5, 4, 3, 2, 1 and for false keyed, the items were scored as 1, 2, 3, 4, 5 respectively. Total scores obtained range between 50-250, thus indicating thatthe higher the score better the mental health and psychological status, the lower the score,the poorermental health, and psychological status among pregnant women. The categories are as follows:

S.No.	Scale Score	Level of mental & psychological health
1	184-250	Good
2	117-183	Average
3	50-116	Poor

All the data were normally distributed, descriptive, and inferential statistics were applied. In inferential statistics, ANOVA, independent, t-tests were performed to assess

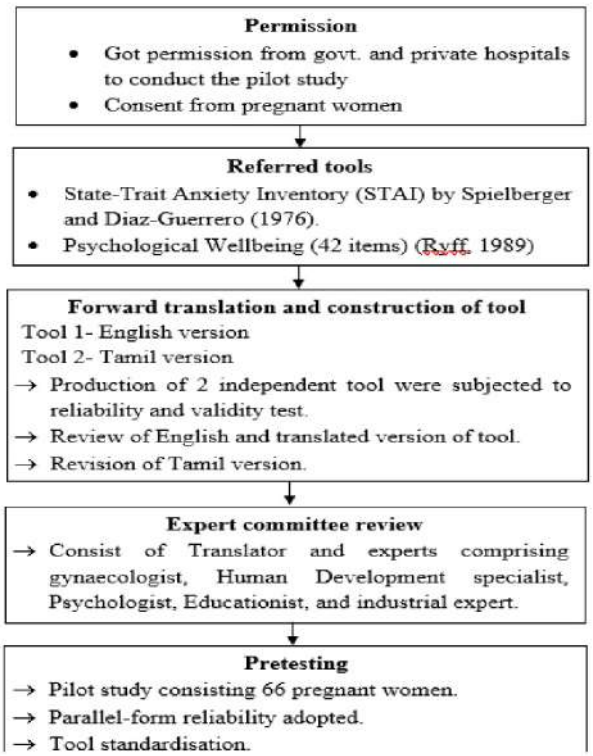

Fig.1. The process of developing the Pregnancy Psychological Status Scale and assessment of mental and psychological health

the mental and psychological health among selected pregnant women.

RESULTS AND DISCUSSION

Demographic profile of the respondents

Demographic factors such as age, religion, and occupation were represented as follows: Table 1 illustrates the descriptive statistics for all variables. The researcher selected total respondents of 66 pregnant women from Coimbatore. These participants were categorized under age, religion, and occupation. Most respondents (69.7%) were between 20 and 30 years of age, and a few, *i.e.,* 30.3 percent fell under the age group of 31-40.

Table 1. Descriptive statistic for all variables (n=66)

S..No.		Variables	Frequency	Percentage
1.	Age	20-30 years	46	69.7
		31-40 years	20	30.3
2.	Religion	Hindu	48	72.7
		Muslim	9	13.6
		Christian	9	13.6
3.	Occupation	Housewives	37	56.1
		Govt. employee	16	24.2
		Private employee	13	19.7

Table 2. Distribution of respondents based on mental and psychological health (n=66)

S..No.	Psychological status	Frequency	Percentage
1.	Good	45	68.2
2.	Average	21	31.8
3.	Poor	0	0

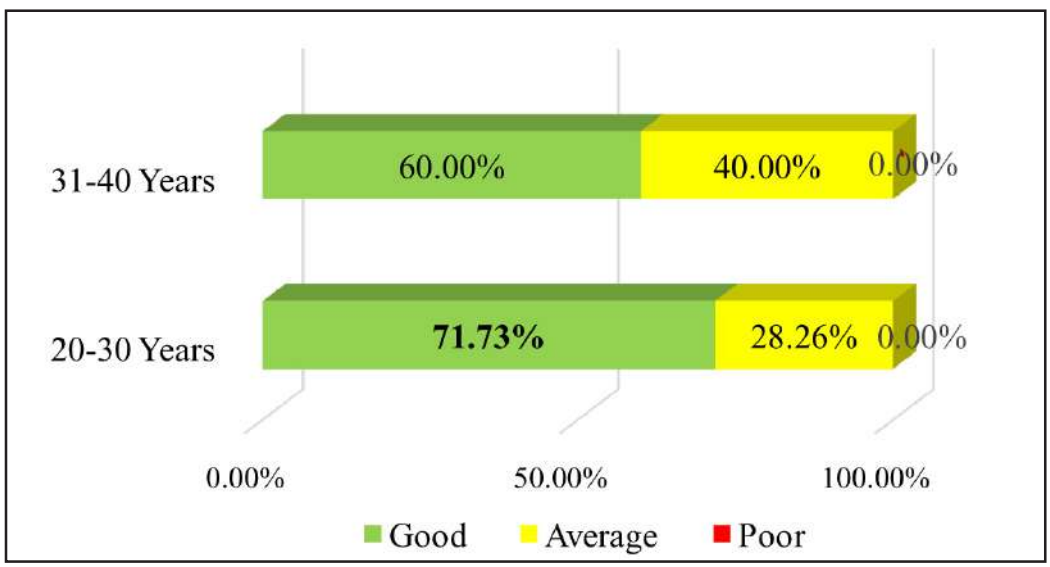

Fig. 2. Level of mental and psychological health among pregnant women in relation to age

Regarding religion, majority of the respondents, *i.e.,* 72.7 percent were Hindu and an equal number of respondents, i.e., 13.6 percent, were distributed under Muslim and Christian, respectively.

Regarding occupation, 56.1 percent were homemakers, 24.2 percent were govt. employees and 19.7 were engaged in private jobs. Table 2 represents the level of the psychological status of pregnant women.From the above table, it was

Table 3. Mental and psychological health of pregnant women based on age (n=66)

Sl. No.	Age	Mean	SD	t	p-value
1.	20-30years(n=46)	198.10	30.30	1.705	0.093NS
2.	31-40 years(n=20)	183.10	38.26		

NS-Not significant

observed thatmajorityof the respondents, *i.e.,* 68.2 percent had good mental and psychological health, and the remaining 31.8 percent had moderate mental and psychological health. There was no one with poor mental and psychological health. Findings showed that most (71.73%) of respondents under the 20-30 age group had good mental and psychological health, while 28.26 percent had average mental and psychological health.

Regarding respondents belonging to 31-40 years, 60 percent had good mental and psychological health, 40 percent were unde r-averageand no respondents were found under poor mental and psychological health in the age groups.

Table 3 describes mental and psychological health of pregnant women based on age. But the result did not show any significant difference.Thus, age groups have no significant difference in their psychological status.The reasons observed by the study were due to individual experiences that may vary, similar expectations and preparedness for their pregnancies, pregnant women of both age groups accessed to have similar support networks comprising partners, family members, friends, or healthcare professionals, and adequate social support.

The study conducted by Ulfah *et al.* (2021) which contradictsthe results of the study revealed that the effect of stress on psychological well-being with age was found significant (p<0.01).

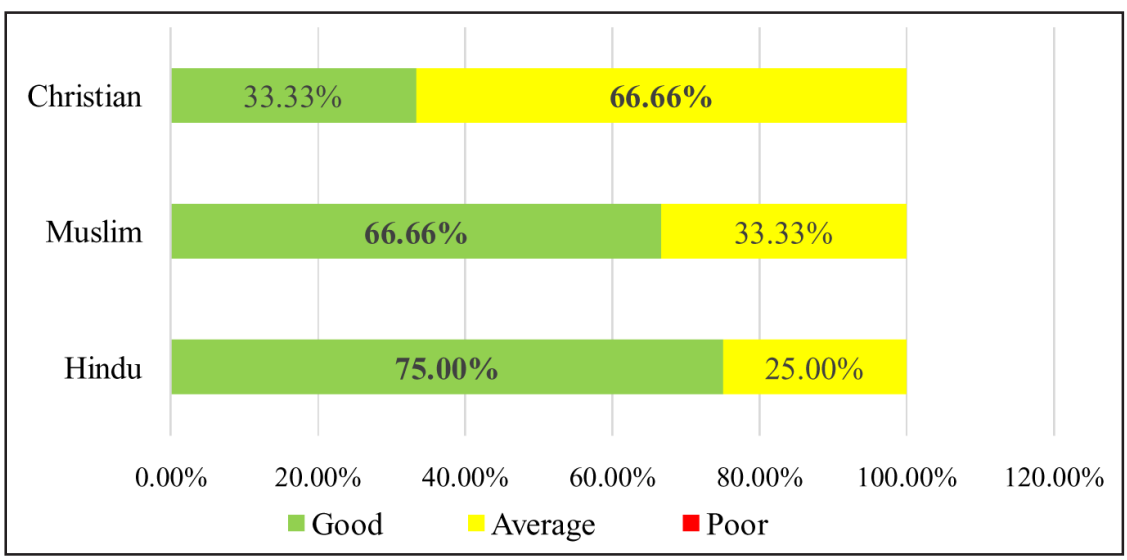

Fig.3. Level of mental and psychological health among pregnant women based on religion

Table 4. Mental and psychological healthof pregnant women based on religion (n=66)

S..No.	Religion	Mean	SD	F	p-value
1.	Hindu (n=48)	200.95	28.08	5.832	0.005**
2.	Muslim (n=9)	183.44	36.16		
3.	Christian (n=9)	164.22	41.02		

**Significant at 1% level

Thus, there was an effect of maternal characteristics such as age, gestational age,and parity on psychological well-being.

Regarding Hindu religion, majority of respondents, *i.e.,* 75.00 percent had good mental and psychological health during pregnancy, while only 25 percent fell under average mental and psychological health. No one was found in poor mental and psychological health.

In case of Muslims, 66.66 percent of the total respondents were in good mental and psychological health, whereas only one-third of the respondents *i.e.,* 33.33 percent were found to have average mental and psychological health. Likewise, for Hindus, none of the respondents fell under the poor category.

Regarding Christian religion, majority of respondents (66.66%) had average mental and psychological healthduring pregnancy and the rest 33.33 percent had good mental and psychological health. However, no respondent was found under poor mental and psychological healthamong Christian respondents.

Table 4 describes the Mean, SD, and F-values of the mental and psychological healthof pregnant women based on religion.

Findings showed that mental and psychological health had significantdifferences based on religion. Regarding religion, the observed mean and SD values among Hindus were 200.95 and 28.08, respectively. In the case of Muslims, the mean value was 183.44, and SD was 36.16. Regarding Christian, it was 164.22, and SD was 41.02, respectively. The observed p-value was 0.005, which is significant at 1% level. From this, it could be stated that respondents from the Hindu religion had better mental and psychological health than Muslims and Christians. However, it is inappropriate and incorrect to generalize about the psychological status of pregnant women based on their religious affiliations. But in this study, the variations of psychological status among different religions were observed based on cultural factors, individual differences, support from in-laws, small family size, and financial security. Hence, Hindu pregnant women tended to have better mental and psychological health than others.

Kumari *et al.*(2013) also support the findings and explored the relationship between religiosity, anxiety, and pregnancy outcomes. The results indicated that higher levels of religiosity were associated with lower anxiety levels and improved pregnancy outcomes.

Regarding occupation, it was observed that many housewives, *i.e.,* 83.7 percent had good mental and psychological healthwhile only very few, *i.e.,* 16.21 percent, were under the

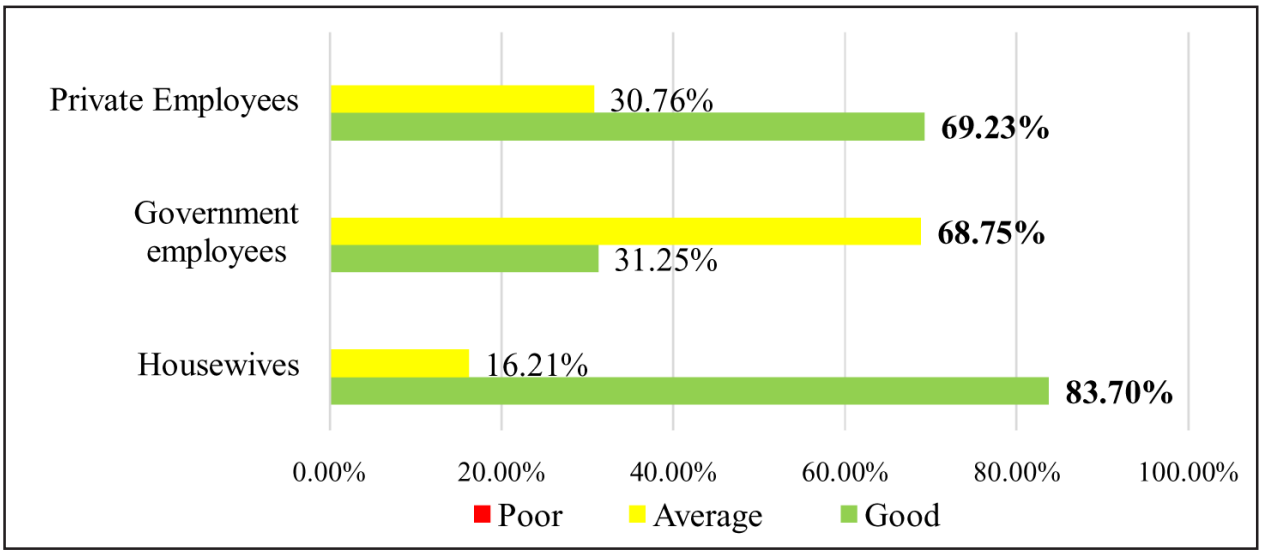

Fig. 4. Level of mental and psychological health among pregnant women based on occupation

category of average mental and psychological health. On the other hand, no one was observed under poor mental and psychological healthduring pregnancy.

In the case of governmentemployees, it was found that 68.75 percent of respondents showed average mental and psychological health, and the remaining 31.25 percent had good mental and psychological health, while no one was found with poor mental and psychological health.

Regarding women working in a privateorganization, 69.23 percent of total respondents had good mental and psychological health, and the rest, 30.76 percent of respondents, showed average mental and psychological health. In contrast, no respondents were observed with poor mental and psychological health.

Table 5 describes the Mean, SD, and F-values of the mental and psychological healthof pregnant women based on occupation. Findings showed that occupation was significantly related to mental and psychological health of pregnant women. Regarding Housewives, the observed mean value was 204.94, and SD value was 25.41. In case of pregnant mothers belonging to government occupation, mean and SD were 164.00 and 32.66, respectively. In case of private employees, the observed mean value was

Table 5. Mental and psychological healthof pregnant women based on occupation (n=66)

S. No.	Occupation	Mean	SD	F	p-value
1.	Housewives(n=37)	204.94	25.41	11.216	0.001**
2.	Government employee (n=16)	164.00	32.66		
3.	Private employee (n=13)	197.53	34.22		

**Significant at 1% level

197.53, and SD was 34.22. The observed p-value was <0.001, which is highly significant at 1% level. From this result it was observed that housewives have better mental and psychological health compared to government and private employees. In addition, private employees are good in mental and psychological healththan government employees. The reasons observed and sighted by the study were due to better family and social support for housewives and they had more time and flexibility to seek help from family members/friends, also reduced work-related stress than those of government and private sectors. As per the literature housewife pregnant women generally have greater autonomy in managing their daily routines and pregnancy-related decisions than working women.

The study contradicts the findings which examined the psychological status of pregnant women based on their employment status and found that working pregnant women exhibited more positive attitudes, a sense of purpose, and higher self-esteem thannon-working women (Bulgakov *et al.*, 2018).

CONCLUSIONS

The study aimed to assess pregnant women'smental and psychological health from govt. and private hospitals in Coimbatore. The results revealed that pregnant women's overall mental and psychological health was good to moderate. The study identified that Hindu housewives were found to have better mental and psychological health than other groups. However, we did not observe any significant difference among age groups. Additionally, these results also revealed that no respondents had poor mental and psychological health during pregnancy. The study suggested that more attention should be paid to identifying the psychological risk factors during pregnancy and providing suitable interventions to improve the lifestyle of pregnant women. Influential factors for psychological status determined in the present studyare to provide additional facilities in the health care sector in relation to public mental health in developing preventive strategies to improve their overall psychological health.

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EFFECTIVENESS OF MUSIC INTERVENTION ON PSYCHOLOGICAL STATUS OF PREGNANT WOMEN

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ABSTRACT

Pregnancy is a period of distinct physiological and psychological changes affecting outcomes. Music is a popular therapy that helps to overcome psychological-related complications. Thus, this study aimed to assess the effectiveness of the music intervention on pregnant women's psychological status. In this quasi-experimental study, 300 pregnant women in the first trimester were selected from government and private health centres in Assam state of Lakhimpur District through purposive sampling. The present study used a Self-structured tool on Pregnancy Psychological Status Scale to assess pregnant women's psychological status. The samples were randomly divided into two groups based on the inclusion and exclusion criteria- the experimental group (30) and the control group (30). Music intervention was given to the experimental group from the fourth month till the end of the eighth month of pregnancy. Independent t-tests, ANOVA, and paired t-tests were employed to analyse the data. A significant difference was observed based on psychological status among the pre-intervention group (t=4.078, <0.001) with respect to age. The results showed that pregnant women aged 25-40 had better psychological status than those of 18-24 years. They were also found to be happy, sociable, able to maintain good family relationships, cope with anxiety, and satisfied with their body image. However, the number of pregnancy did not predict significant relation in their psychological status. Music intervention was found significant (t=4.001, *P* <0.001) based on the overall psychological status of pregnant women. This research proved that music intervention effectively improves pregnant women's psychological status. The study recommends that healthcare specialists, society, and even family members focus more on identifying the psychological status and its hazardous factors in pregnancy and provide suitable interventions for improving pregnant women's mental health and lifestyle.

Keywords: psychological status, pregnancy, age, number of pregnancies, music intervention.

INTRODUCTION

Pregnancy is a crucial period in every adult female life and is filled with feelings of joy and excitement; nevertheless, negative emotions such as stress, anxiety, depression, mood swing, etc., are prevalent during pregnancy (Lindsay et al., 2019). In the previous decade, many researchers have viewed the impact of stress and other negative feelings on pregnant mothers and fetal development (Lindsay et al., 2019). However, some other studies have revealed that higher stress during pregnancy leads to greater levels of spontaneous preterm childbirth and decreased birth weight (Liou et al., 2016; Staneva et al., 2015).

It has been noticeable that one-fifth of pregnant mothers face psychological complications before or soon after childbirth; however, most difficulties take up to a year to overcome, but some challenges or disorders result in a chronic form (Austin et al., 2008). During the first and third trimesters, approximately two-thirds of pregnant women experience psychological difficulties, including stress, mood swings, anxiety, irritability, and depression, with a clinically proven 10% prevalence of depression in the first trimester (Leon, 1992). Risk factors for depression during pregnancy include a history of miscarriage, stillbirth, depression, unwanted or unplanned pregnancies, marital conflicts, dissimilarities, negative partner reactions, and lack of family support (Leon, 1992). During pregnancy, anxiety results in specific kinds of fear or panic attacks, while anxiety is a bodily response to stress (Cantwell & Cox, 2003). Depression, anxiety, lack of sleep & tiredness, the influence of cortisol, and busyness on pregnancy-related difficulties revealed that it negatively impacts prospective memory (Cuttler et al., 2011).

Music therapy, involving a combination of instruments, singing, and body movement, is actively used in psychotherapy to relax the body, reduce anxiety, lower blood pressure, and complement non-pharmacological treatments for psychiatric and behavioural disorders (Skrbina, 2013; Witusik & Pietras 2019; Petot et al., 2019; Bradt et al., 2013). A study revealed that 72.20% of pregnant women listened to music regularly or at least once per week, with 48.50% expressing interest in participating in a music program, indicating that music is a highly accepted intervention to promote the health of pregnant women (Arabin & John, 2013). However, another study revealed that expectant mothers who practice and listen to music before amniocentesis exhibited reduced cortisol levels and anxiety (Ventura et al., 2012). While a batch of pregnant women in a music intervention found that women learning to sing lullabies were found to aid emotional representation, reduce anxiety, and witness a positive experience during pregnancy (Carolan et al., 2012). Many types of research establish the positive impacts of music therapy during pregnancy on decreasing anxiety and stress (Liu et al., 2010; Yang et al., 2009). Indian Classical Music has a significant impact on moods and behaviour, with specific ragas and notes positively influencing individuals' mindsets, as mentioned in the Upanishads, and during early pregnancy, music provided to women has a beneficial effect on the fetus (Kalaivani, 2011)

JUSTIFICATION

Music offers various positive effects on pregnant women and their developing fetuses, including stress and anxiety reduction, fostering bonding, pain management, and improved sleep, making it a valuable tool for promoting well-being during pregnancy. The study aims to assess the psychological status of pregnant women and implement music intervention to enhance their mental state during the prenatal period. Hence the researcher decides to conduct the study to evaluate the maternal psychological status and apply music intervention to improve the psychological status of pregnant women.

OBJECTIVES OF THE STUDY

The study was carried out to

- Assess psychological status and its dimensions among pregnant women based on age and number of pregnancy.
- Assess the effectiveness of the music intervention on psychological status of pregnant women.

HYPOTHESES

H_1-There is no significant difference in the psychological status and its dimensions among pregnant women based on age.

H_2-There is no significant difference in the psychological status and its dimensions among pregnant women based on number of pregnancy.

H_3-There is no significant difference in the effectiveness of the music intervention on psychological status of pregnant women.

METHODOLOGY

Study design

The research design used in this study was a quasi-experimental study that attempts to establish a cause-and-effect relationship between an intervention and an outcome. The sampling method for the current study was the purposive sampling technique, a form of non-probability sampling in which researchers rely on their judgment when choosing population members. After screening eligibility criteria, samples were divided into the control (30) and experimental group (30). Music intervention was given online to pregnant women for five months, from November 2021 to March 2022, which started in the fourth month till the end of the eighth month of pregnancy. The Human Ethics Committee of Lakhimpur Medical College and Hospital, Assam, and Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, approved the study.

Selection of the sample

A total of 300 pregnant women were selected from government and private hospitals in the Lakhimpur district of Assam through purposive sampling. Prior permission/consent was obtained from the pregnant women, their families, and hospitals for the conduct of the study.

Construction of Tool

The psychological status of pregnant women was assessed before and after the intervention programme. The assessment was done with the help of a self-constructed tool named 'PREGNANCY PSYCHOLOGICAL STATUS SCALE.' The tool was designed by referring to various available tools based on psychological status and discussing their emotions and feelings with the pregnant women during this period. The tool was designed to measure the psychological status of pregnant women with 40 statements in seven dimensions, namely happiness (4 items), stress (10 items), anxiety (7 items), Family Relationship (5 items), Socialization (4 items), Physical Health (6 items), and Body Image (4 items). Of 40 items, 17 are true-keyed, and the remaining 23 are false-keyed. A 4-point Likert scale was adopted to respond to each statement: often, sometimes, rarely, and never. The higher the score, the better the psychological status; the lower the score, the poorer the psychological status among pregnant women. The maximum score for the tool was 160, and the minimum score was40. The tool was subjected to Cronbach's alpha tests, and the value was 0.71.

At the time of intervention, the samples were divided into control and experimental group. The assessments were performed at baseline, after the sixth and eighth months of pregnancy.

Data collection and intervention

The psychological status of the pregnant women was assessed before, during, and after the intervention. The intervention was carried out offline among sixty pregnant women. Based on the initial assessment, respondents' willingness and persons not involved in other therapy sessions were selected and divided into the control (30) and experimental group (30). The control group was kept as such without being given any intervention package. The experimental group was assigned music intervention with a planned schedule. During the initial period, a face-to-face meeting was conducted for both groups where a detailed description of the intervention protocol and minimum term of participation were explained to them. The intervention was started in the second trimester (the fourth month) of pregnancy.

Pre-recorded music was selected for the intervention programme after reviewing related articles and consulting experts from the respective fields. The music intervention included nature music, instrumental, and folk music of Assam, Garbha Mantra, classic Hindi Instrumental Music, and lullabies. The pre-recorded music CD was given to the expert. Based on the expert's suggestions, the CD was refined and finalized.

Implementation of Music Intervention

Music intervention was carried out online initially due to COVID, convenience and affordability, less time consuming, a good choice for remote areas, ease of access for people with physical constraints, etc. A WhatsApp group was created for the intervention group, and daily 15-20 minutes of pre-recorded music were uploaded till eight months of pregnancy. In-between offline intervention was also given as per the convenience of pregnant women. The experimental group was asked to listen to the music at any time. They played it as background music whenever they cooked, cleaned, or worked.

For each week, the theme of music was varied. Every 15 days, an online session was carried out through google meet for 30-45 mins to monitor their progress. The respondents were given music CDs for easy access. They were asked to follow up; hence, a sign-off sheet was provided to record daily intervention sessions. Also, simple interactive activities were given along with routine sessions. The psychological well-being was assessed for the control and experimental group in each trimester through Pregnancy Psychological Status Scale.

Statistical analysis

Data were analysed using IBM SPSS 21 version. All the data were normally distributed. Descriptive and inferential statistics were applied. In inferential statistics, ANOVA, independent, and paired t-tests were performed to assess the psychological status before, during, and after the intervention.

RESULTS AND DISCUSSION

Demographic profile of the respondents

The 300 participants were categorized under different variables like age and number of pregnancy. Regarding age, 50.30% were 18-24 years of age, whereas 49.70% were between 25-40 years of age group.

With regard to number of pregnancy, the majority of the respondents, i.e. 60% belonged to 1st pregnancy, whereas 33.70% were 2nd pregnancy, and the least respondents, i.e., only 6.30%, were planning for their 3rd pregnancy.

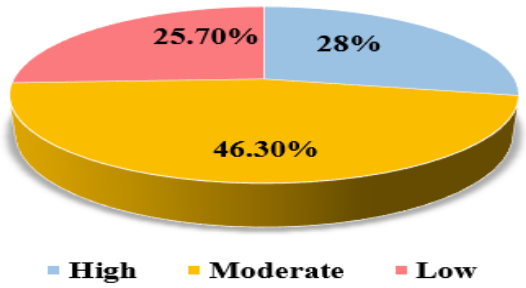

Fig.-1

Psychological status of pregnant women

In the given Pie graph (Figure-1), it was noticed that most of the total respondents, i.e., 46.30% had moderate psychological status, and the remaining 28% and 25.70% belonged to high and low psychological status.

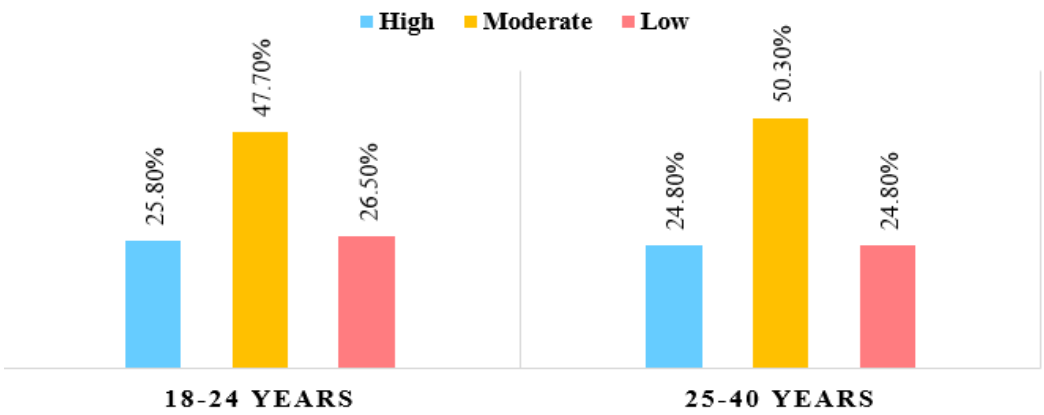

Fig.-2 Psychological status among pregnant women based on age

Figure 2 shows that among 18-24 years of age group, the majority of respondents i.e. 47.70% had moderate psychological status. In comparison, an almost equal percentage of respondents i.e. 25.80% and 26.50%, had high and low psychological status, respectively.

In case of 25-40 years, 50.30% percent of respondents showed moderate psychological status, whereas 24.80% of pregnant women were found to have high and low psychological status simultaneously.

Figure2 depicts that among age groups, respondents of 24-40 years had good psychological status as compared to 18-24 years of age group.

Table-1 Dimension-wise psychological status of pregnant women based on age

Dimensions of Psychological Status	Age				t value	p-value
	18-24 years		25-40 years			
	Mean	SD	Mean	SD		
Overall psychological status	103.13	10.382	**108.10**	10.748	4.08	**.001****
Happiness	11.67	1.628	**12.06**	1.737	2.02	**.045***
Stress	22.88	4.322	23.56	3.840	1.45	.149
Anxiety	15.62	2.754	**17.25**	2.975	4.91	**.001****
Family Relationship	14.52	2.169	**15.35**	1.841	3.55	**.001****
Socialization	11.34	2.358	**12.12**	2.365	2.87	**.004****
Physical Health	15.66	3.090	15.63	3.083	0.07	.945
Body Image	11.44	2.340	**12.13**	2.744	2.35	**.020***

**Significant at 1% level *Significant at 5% level

Table 1 depicts the overall psychological status of pregnant women, which was found to be better among 25-40 years age group than 18-24 years with a significant difference. However, 24-40 years of age group women predicted less anxiety, happier, good in family relationships and socialization. They felt happy about their body image since the obtained mean value was higher. At the same time, other dimensions did not show significant differences. Hence, hypothesis-1 could be rejected.

The result is supported by a study that examined pregnant women's psychological status during the COVID-19 outbreak and found a positive relationship ($p<0.05$) between psychological impact and factors such as pregnancy age, conception, religion, occupation, area, and history of abortion (Jelly et al., 2021).

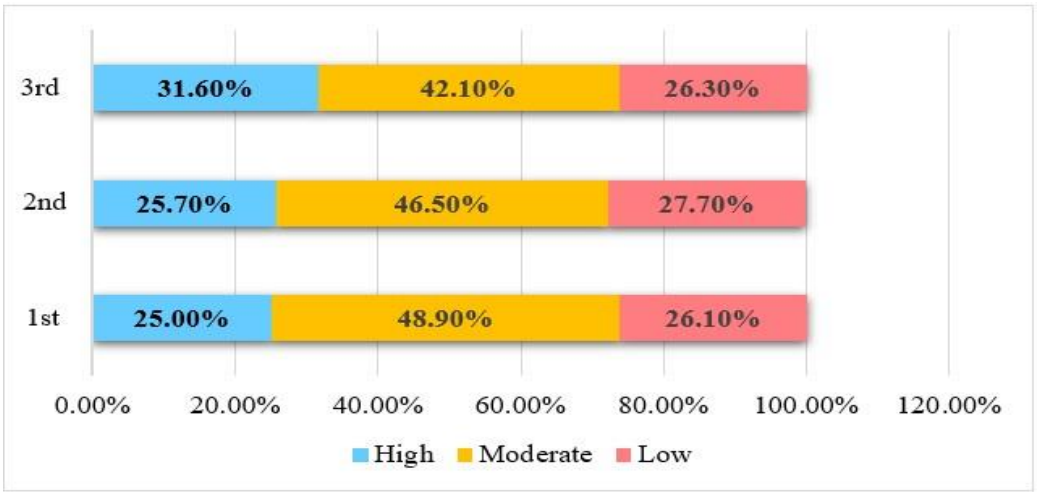

Fig. -3 Level of psychological status among pregnant women based on number of pregnancy.

In Figure 3, regarding the first pregnancy, 48.90% had moderate psychological status, 25.00% and 26.10% were under the high and low psychological level, respectively.

Regarding second pregnancies, 25.70% had high psychological status, most respondents (46.50%) reported moderate psychological status, and 27.70% had low psychological status.

Regarding 3rd pregnancy, 31.60% had high psychological status, while most respondents (42.10%) had moderate psychological status, and only 26.30% had low psychological status.

It is revealed that first-pregnancy women are somewhat better in their psychological status than 2nd and 3rd pregnancies, as shown in figure 3.

Table-2 Dimension wise psychological status of pregnant women based on number of pregnancy

Dimensions of Psychological Status	No. of Pregnancy				ANOVA			
	1st (180)	2nd (101)	3rd (19)	Total (300)	Sum of square	Mean square	F value	p-value
	Mean	Mean	Mean	Mean				
Happiness	11.72 (1.715)	12.08 (1.501)	12.11 (2.283)	11.86 (1.691)	9.691	4.845	1.70	.184^{NS}
Stress	23.09 (4.260)	23.29 (3.793)	24.11 (4.175)	23.22 (4.097)	18.439	9.220	0.55	.579^{NS}
Anxiety	16.22 (3.160)	16.84 (2.603)	16.21 (2.936)	16.43 (2.975)	25.796	12.898	1.46	.233^{Ns}
Family Relationship	14.73 (2.166)	15.21 (1.829)	15.42 (1.895)	14.93 (2.052)	19.740	9.870	2.37	.096^{NS}
Socialization	11.60 (2.442)	11.99 (2.274)	11.53 (2.503)	11.73 (2.390)	10.660	5.330	0.93	.395^{NS}
Physical Health	15.79 (3.196)	15.35 (2.920)	15.84 (2.834)	15.64 (3.081)	13.461	6.731	0.71	.494^{NS}
Body Image	11.48 (2.423)	**12.24** (2.736)	12.21 (2.699)	11.78 (2.568)	41.114	20.557	3.16	**.044***
Overall psychological status	104.62 (11.543)	106.99 (9.074)	107.42 (12.043)	105.60 (10.838)	430.264	215.132	1.84	.160^{NS}

*Significant at 5% level NS-Not Significant Note: The Value within the bracket refers to SD

From Table 2, it was found that the overall psychological status of the pregnant women did not show significance. However, there was a significant difference in number of pregnancies with respect to Body image. The observed mean value was higher during 2nd pregnancy than 1st and 3rd pregnancy, indicating that pregnant mothers who would have their second baby were more satisfied and happier with their body image as they might have experienced the situations during previous pregnancies. At the same time, other dimensions did not show a significant difference. Hence, hypothesis-2 could be accepted. In case of Body Image, hypothesis-2 is rejected.

A contradictory study on second-time pregnant women's psychological status revealed that factors such as fetal sex expectations, young age, low education level, and low family income significantly influenced anxiety levels ($p<0.05$). These findings indicated varying stress, anxiety, and hopelessness during second pregnancies (Cai et al., 2022).

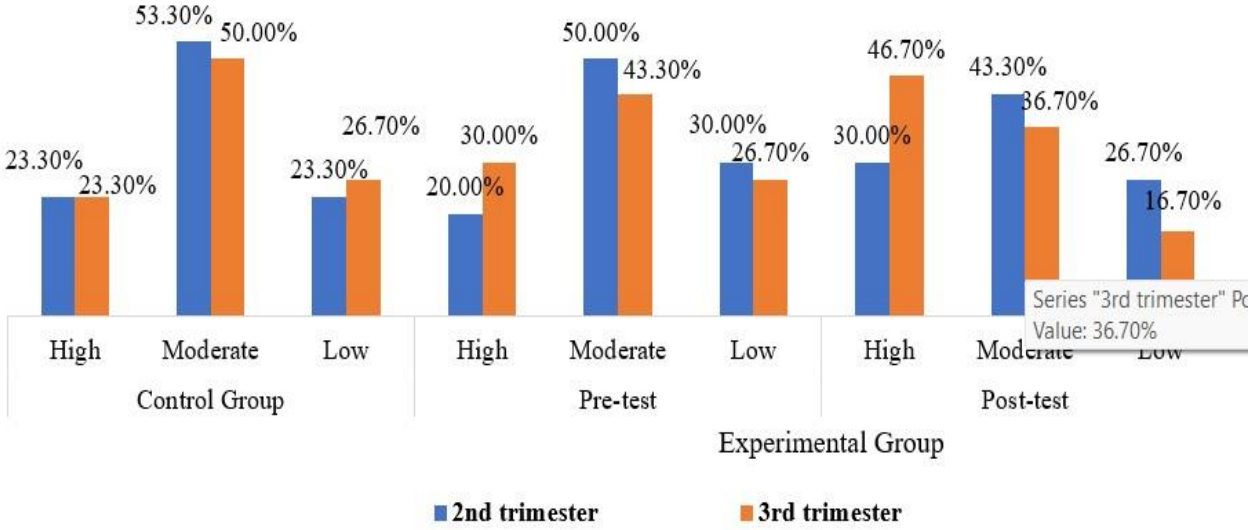

Fig.-4 Levels of the psychological status of the control and experimental group of music intervention.

Figure 4 shows that most selected respondents among the control group of the 2nd trimester (53.3%) reported moderate levels of psychological status. A similar percentage of respondents (23.3%) stated high and low psychological status. Whereas during the 3rd trimester majority i.e., 50% of respondents, stated moderate psychological status and 26.7% stated low psychological status, and only 23.3% were under high psychological status.

In the experimental group in Figure 4, in the pre-test (2nd trimester), before the intervention, most respondents (50%) encountered moderate psychological status, and 20% and 30% of respondents expressed high and low psychological status, respectively. However, in the post-test, at the end of the 2nd trimester, most respondents (43.30%) reported moderate psychological status, and 30% and 26.70% reported high and low status.

At the end of the 3rd trimester, 2nd-trimester pregnant women were placed in the pre-test level. In the post-test, most pregnant women (46.70%) reported high psychological status, and 36.70% and only 16.70% stated moderate and low psychological status.

Table-3 Results of psychological status in experimental and control groups based on music

Experimental group (30)		**Mean**	**SD**	**t value**	**p-value**
2nd trimester	Pre-test	101.37	17.993	0.62	.541^{NS}
	During	104.43	18.801		
3rd trimester	During	104.43	18.801	4.00	**.001****
	Post-test	113.10	18.378		
Control group (30)					
Pair 1	1st Trimester	103.77	16.872	1.36	.185^{NS}
	2nd Trimester	98.30	15.777		
Pair 2	2nd Trimester	98.30	15.777	1.36	.201^{NS}
	3rd Trimester	95.07	18.268		

******Significant at 1% level NS-Not Significant

Table 3 demonstrations that the music intervention (t=0.62) was ineffective during the 2nd trimester. But the score of 3rd trimester (t=4.00, *P*<0.001) indicated that Music intervention effectively improved pregnant women's psychological status. Hence, hypothesis-3 could be rejected.

However, no significant difference was found during all trimesters regarding pregnancy psychological status among the control group. But the observed mean scores stated that the psychological status of pregnant women gradually scores lower during 3rd trimester as compared to 1st and 2rdtrimesters.

The results of the pre and post-test of music intervention stated that after the music intervention, no effectiveness was observed at the end of the second trimester. Still, the mean value scores were better than the pre-test scores. Whereas, after the five months of music intervention, respondents showed better psychological status at the end of the 3rd-trimester than the 2nd trimester, and significant differences were observed at a 1% level.

The above results are supported by a study that investigated music and singing intervention during pregnancy which demonstrated that both interventions positively affected maternal psychological well-being and the bonding between mother and infant. The singing intervention group showed a higher stress reduction and more remarkable emotional state improvement than the music group, suggesting their potential for enhancing mood and supporting mother-infant bonding (Wulff et al., 2021).

Music intervention, a popular therapy, was employed in this study to alleviate stress and anxiety among pregnant women. Initially, no significant effects were observed, but after five months of continuous therapy, participants showed increased post-test scores, indicating the effectiveness of music intervention during pregnancy.

The study's limitations include conducting it during the second wave of Coronavirus disease 2019 (COVID-19), limited access to data focusing only on the first trimester of the 18-40 age group, and time constraints due to participants being available for only nine months. Additionally, the study's findings may not be generalized to all pregnant women in India due to geographical variations and a small sample size, as it was conducted in one district of Assam.

CONCLUSION

The present study proved that music intervention during pregnancy significantly improves coping with stress and anxiety, family relationships, socialization, and the pregnant women's physical health. This study can bring awareness to doctors, clinical practitioners, social workers, and family members as music intervention effectively reduces stress and anxiety and improves pregnant women's psychological status. Healthcare professionals should accept that every woman differs from others and educate them on maintaining good psychological status and lifestyle modification. Every health personnel should be involved in providing antenatal caretakers to work towards achieving this goal during the antenatal period to better the vulnerable group.

IMPLICATIONS

- The researcher will discuss with the gynaecologists, psychiatrists, and hospitals authority the results of the present study and bring their attention to the use of music as a non-pharmaceutical treatment to improve pregnant women's psychological status.
- This study will help to conduct music intervention or counselling sessions for pregnant women in hospitals.
- This study's results will help further generations/respondents to be aware of their health.

- This study would help to conduct workshops, conferences, and seminars to improve pregnant women's emotional and psychological health.
- An educational awareness programme can be organized to train the health workers about using music intervention during labour.

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ORIGINAL ARTICLE

Meditation and music intervention for improving pregnancy psychological health

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ABSTRACT

Introduction: There is currently limited research investigating mindfulness-based interventions' effects on self-reported and physiological stress indicators among pregnant women in India. Thus, the study examined the effectiveness of music and meditation interventions on the psychological status of pregnant women in Lakhimpur, Assam.

Materials and Methods: In this quasi-experimental study, 300 pregnant women in the first trimester were selected using purposive sampling. The samples were divided into experimental (60) and control (60). The experimental group was randomized into two subgroups: Meditation (30) and music intervention (30). Data were collected through a self-structured tool to assess pregnant women's psychological status. Analysis of variance and *t*-tests were used to analyze the data.

Results: The study found that pregnant women working in the government sector had a significantly better psychological status ($p = 0.050$). While no significant difference was observed in the area of living with the psychological status of pregnant women. The meditation intervention showed gradual improvement during the third trimester ($p < 0.001$), while continuous listening to music significantly improved psychological status during the third trimester ($p < 0.001$).

Conclusion: The study results could be utilized by health-care providers, policymakers, and stakeholders to implement interventions that enhance the mental health of pregnant women.

Key Words: Area and occupational backgrounds, efficacy, first-trimester pregnant women, music and meditation intervention, psychological status

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INTRODUCTION

Pregnancy is a complex and specific period for every pregnant woman during which she experiences various physiological and psychological changes.[1] Usually, this period is filled with happiness and excitement; however, it is common for pregnant individuals to experience stress and other negative emotions.[2] These negative emotions or psychological difficulties, such as stress, anxiety, and depression, may result in adverse obstetric complications, such as fetal death or anomalies.[3] High level of anxiety during pregnancy has been linked to shorter gestations, lower birth weight, shorter birth length, and increased uterine artery resistance.[4] Shreds of evidence suggests that heightened stress levels during pregnancy can negatively impact a child's

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cognitive and emotional development, potentially leading to decreased attention span and elevated levels of anxiety and fear.[5-7]

In recent decades, antenatal and postnatal care has significantly improved pregnant women's care; however, not all systems have included psychosocial interventions to empower women.[8] Pharmacological interventions may not always be necessary during this time, especially for women experiencing less severe symptoms who may prefer nonpharmacological approaches. Therefore, there is a requirement to explore alternative intervention methods.[9]

Numerous studies have shown that mindfulness intervention can be an effective nonpharmacological treatment for various conditions during pregnancy.[10,11] Mindfulness techniques have been shown to mitigate pregnancy symptoms, including but not limited to stress, anxiety, tiredness, sleeplessness, distress, pain during labor, and postnatal depression.[12] Research has provided compelling evidence that mindfulness training effectively mitigated the adverse impact of inadequate sleep on the perception of stress among expectant mothers.[13] Many studies indicate that practicing mindfulness-based techniques, particularly in the third trimester, can improve anxiety and depression among pregnant women, potentially serving as a complementary approach to the clinical treatment of pregnancy-related depression.[14,15]

On the other hand, studies have shown that pregnant women use prenatal music stimulation to induce relaxation, promote positive outcomes during labor, and significantly reduce pain, anxiety, and levels of anguish during labor.[16,17] In addition, the role of music therapy in promoting psychological well-being has demonstrated its positive impact on reducing emotional challenges pregnant women face, including maternal stress, worry, and low mood.[18] As an accessible, nonpharmacological, and harmless approach, music therapy can be crucial in promoting mental well-being throughout pregnancy and postpartum.[19]

According to the literature, meditation and music interventions effectively reduced stress, fear, or anxiety while promoting psychological well-being throughout pregnancy. Studies found that mindfulness meditation, deep breathing, and pranayama effectively improve mental and psychological health.[20] It reduces symptoms of depression and anxiety, improves sleep quality, and lowers the level of the stress hormone cortisol stress.[21] However, many studies have concluded that music can calm the mother and the unborn child, and evidence indicates that it effectively decreases the secretion of cortisol, a hormone associated with stress, while concurrently reducing blood pressure and fostering a heightened sense of relaxation and well-being.[22] Thus, music and meditation interventions have been found to improve the mother's emotional state, which can positively affect the mother's psychological status and the developing fetus. Currently, limited research investigates the effects of mindfulness-based interventions on self-reported and physiological stress indicators among pregnant women in India. Therefore, the researcher opted to undertake a study to assess the psychological status of pregnant women and implement music and meditation interventions to enhance their psychological health.

The study aimed to assess the psychological status and its dimensions of pregnant women based on area of living and occupation. And to assess the effectiveness of music and meditation intervention on the psychological status of pregnant women.

MATERIALS AND METHODS

Participants and sample size

A purposive sampling technique was employed to select 300 pregnant women in their first trimester from government and private hospitals located in the Lakhimpur district of Assam. Prior permission/consent was obtained from the pregnant women, their families, and hospitals for the conduct of the study.

Selection criteria

The researcher employed specific criteria to determine the composition of the sample. Following a thorough eligibility screening, the inclusion criteria encompassed pregnant women in their first trimester, aged between 18 and 40 years, and experiencing their first, second, or third pregnancy. In contrast, the exclusion criteria were based on factors such as unwillingness to participate, age below 18 or above 40 years, prior participation in the pilot study, and residency outside of the Lakhimpur region.

Ethical consideration and consent from participants

The study obtained ethical approval from two reputable institutions: The Human Ethics Committee of Lakhimpur Medical College and Hospital, Assam (Approval No. LMC/IEC-21/12/01) and the Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore (Approval No. AUW/IHEC/HD-21-22/XPD-26). As per ethical guidelines, written consent forms were obtained from all participating pregnant mothers, ensuring their voluntary and informed participation in the study.

Study design

The study utilized a quasi-experimental design to establish a cause-and-effect relationship between the intervention and the outcome. At the same time, purposive sampling was employed to select participants based on the researchers' judgment. After screening eligibility criteria, samples were divided into the control (60) and experimental group (60). The experimental group was randomized into two groups, i.e., meditation (30) and Music intervention group (30). Similarly, the control group was randomly divided into the meditation control group (30) and the music control group (30) [Figure 1].

The meditation intervention was given to the pregnant women for 5 months, composed of fourteen sessions from the 4th month till the end of the 8th month of pregnancy. It was given in the three Anganwadi centers every Sunday till the end of the 8th-month pregnancy. Simultaneously, music intervention was given online to pregnant women for 5 months, from November 2021 to March 2022, composed of 20 sessions from the 4th month till the end of the 8th-month pregnancy.

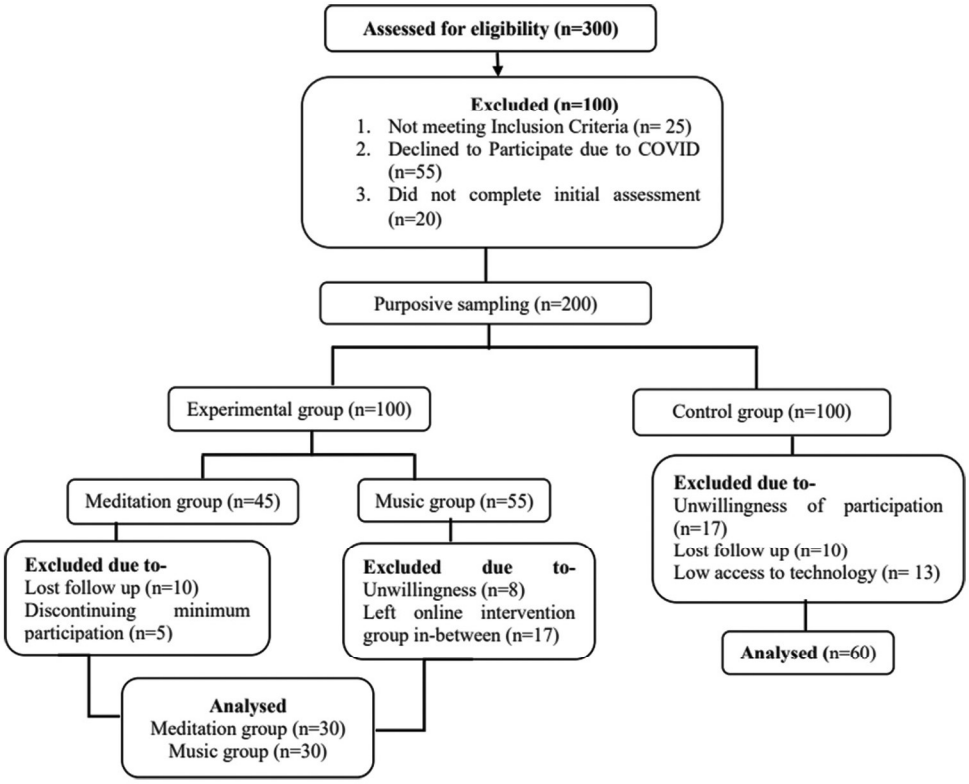

Figure 1: Intervention population plan

Tools for assessment and data collection

The psychological status of pregnant women was assessed before and after the intervention program. The assessment was made with the help of a self-constructed tool named "Pregnancy Psychological Status Scale (PPSS)." The tool was designed by referring to State-Trait Anxiety Inventory by Spielberger and Diaz-Guerrero (1976), Psychological Well-being (42 items) (Ryff, 1989) tools based on psychological status and psychological conditions during pregnancy. The tool was designed to measure the psychological status of pregnant mothers with 40 statements in seven dimensions, namely happiness (4 items), stress (10 items), anxiety (7 items), Family Relationship (5 items), Socialization (4 items), Physical Health (6 items), and Body Image (4 items). Of 40 items, 17 are true-keyed, and the remaining 23 are false-keyed. A 4-point Likert scale was adopted to respond to each statement: often, sometimes, rarely, and never. Pregnant women with higher scores exhibit better psychological well-being, while those with lower scores demonstrate poorer psychological status. The maximum score for the tool is 160, and the minimum is 40. The tool was subjected to Cronbach's alpha tests, and the value was 0.71.

At the time of intervention, the samples were divided into control and experimental groups. The assessments were performed at baseline, after the 6th and 8th months of pregnancy.

Intervention

Based on the researcher's knowledge from previous research articles and consultation with experts in the respective fields, types of music and meditation were refined and finalized to use in pregnant women.

The meditation intervention includes breathing exercises focusing on the breath, relaxation techniques, deep belly breathing, loving-kindness meditation, and various pranayama such as Dirgha and Shitali Pranayama, Bhramari and Omkar Pranayama-focusing on the breath, Visualize meditation.

After thoroughly reviewing relevant articles and seeking guidance from experts in the respective fields, prerecorded music was chosen for the music intervention group. The music intervention included nature music, instrumental, folk music of Assam, Garbha Mantra, classic Hindi Instrumental Music, and lullabies. The prerecorded music CD underwent review by the experts who provided suggestions for improvement, resulting in the refinement and finalization of music to be given to the pregnant mothers.

The intervention was carried out among 120 pregnant mothers. Based on the initial assessment, respondents' willingness and persons not involved in other therapy sessions were selected and divided into the control (60) and experimental group (60). The control group was kept as such without being given any intervention package. The experimental group was assigned meditation (30) and music intervention (30) with a planned schedule. During the initial period, a face-to-face meeting was conducted for both groups where a detailed description of the intervention protocol and minimum term of participation were explained to them. The intervention was started in the second trimester (4th month) of pregnancy.

Implementation of intervention

Meditation therapy was conducted offline for specific reasons, such as it is easy to monitor and follow the steps, and the voice can make them relaxed and suitable for beginners. It was conducted once a week (every Sunday) till the 8th month of pregnancy. The participants were encouraged to complete the exercises during the sessions and practice at home for 6 days each week. Initially, they were asked to practice it for 15–20 min and gradually increase the timing according to their comfort. To monitor the pregnant women, a sign-off sheet was given to record daily therapy sessions. Weekly progress assessments were conducted through feedback and one-to-one sessions, accompanied by interactive activities to enhance engagement and participation during the regular sessions. The researcher has a diploma in meditation; hence, it is easy to carry out the program.

Music intervention was carried out online initially due to COVID, convenience and affordability, less time consuming, a good choice for remote areas, ease of access for people with physical constraints, etc. A dedicated WhatsApp group was created for the intervention group, where 15–20 min of prerecorded music were uploaded daily to ensure consistent exposure to the beneficial effects of music till 8 months of pregnancy. For each week, the theme of music was varied. In-between offline intervention was also conducted for the convenience of pregnant mothers. Every 15 days, an online session was carried out through Google Meet for 30–45 min to monitor their progress. The music group was asked to listen to the music at any time. They played it as background music whenever they cooked, cleaned, or worked. The respondents were given music CDs for easy access. They were asked to follow up; hence, a sign-off sheet was provided to record daily intervention sessions. Furthermore, simple interactive activities were given along with routine sessions. The psychological status was assessed for the control and experimental group in each trimester through the PPSS.

Statistical analysis

The collected data exhibited a normal distribution, enabling the utilization of both descriptive and inferential statistics. In inferential statistics, analysis of variance, independent *t*-tests, and paired *t*-tests were employed to evaluate the participants' psychological status before, during, and after the intervention.

RESULTS

Participants' characteristics

The 300 participants were categorized under different variables of area of living and occupation. Regarding the area of living, most respondents, i.e., 75.70% of pregnant women, belonged to rural areas, and the rest, 24.30% were from urban areas. Concerning the occupation of pregnant women, majority of the respondents, i.e., 77.30% were homemakers, whereas 11.70% were government employees and only 11.00% worked in the private sector.

The overall level of psychological status

In the given Pie graph [Figure 2], it was noticed that most of the total respondents, i.e., 46.30%, had moderate psychological status, and the remaining 28.00% and 25.70% belonged to high and low psychological status, respectively.

Dimension-wise psychological status among pregnant mothers

Table 1 shows dimensions of the psychological status of pregnant women based on their area of living. However, the result did not show any significant difference. Thus, areas had no significant difference in pregnant women's psychological status. However, the mean value of pregnant women in urban areas was higher in overall psychological status, anxiety, family relationships, physical health, and body image. However, pregnant women in rural areas had a higher mean value in happiness, stress, and socialization. Hence, the results concluded that respondents from urban areas were less anxious, had good family relations, and were satisfied with their physical health and body image. In comparison, respondents from the rural area were happy, good at coping with stress, and maintaining a better social life.

Table 2 displays the dimension-wise psychological status of pregnant women based on occupation. Overall psychological status of pregnant women was found to be better among mothers of government employees ($p < 0.05$) than private employees and homemakers, with significant differences. However, pregnant women who work in the government sector had a good relationship with their families ($p = 0.006$) since the obtained mean value was higher among them. At the same time, other dimensions did not show significant differences.

From Table 3, it was noted that meditation therapy ($t = 2.188$, $p = 0.037$) was effective at the end of the 2nd trimester. However, the scores of the 3rd trimester ($t = 3.550$, $p < 0.001$) were better than those of the 2nd trimester and indicated that meditation intervention effectively improved the psychological status of pregnant women.

From Table 3, it could be noted that no significant difference was found among the control group regarding pregnancy psychological status. However, the observed mean scores stated that the psychological status of pregnant women gradually

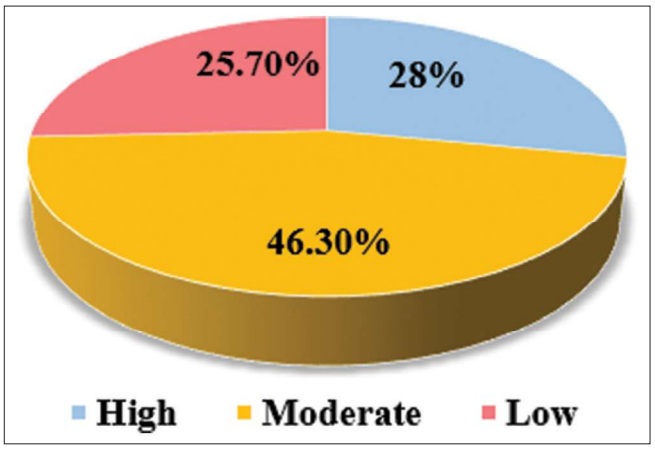

Figure 2: Psychological status of pregnant women

Table 1: Dimensions of psychological status of pregnant women based on area of living

Dimension of psychological status	Area of living, mean (SD)		t	p
	Rural (227)	Urban (73)		
Happiness	11.89 (1.606)	11.79 (1.943)	0.399	0.690 (NS)
Stress	23.27 (4.160)	23.05 (3.919)	0.395	0.693 (NS)
Anxiety	16.25 (2.885)	16.99 (3.195)	1.844	0.066 (NS)
Family relationship	14.90 (2.079)	15.04 (1.975)	0.515	0.607 (NS)
Socialization	11.74 (2.407)	11.67 (2.351)	0.227	0.820 (NS)
Physical health	15.62 (3.139)	15.71 (2.913)	0.220	0.826 (NS)
Body image	11.69 (2.500)	12.05 (2.768)	1.051	0.294 (NS)
Overall psychological status	105.37 (11.238)	106.32 (9.525)	0.650	0.480 (NS)

SD, Standard deviation; NS, Not significant

Table 2: Dimensions of psychological status of pregnant women based on occupation

Dimensions of psychological status	Occupation, mean			ANOVA	
	Homemakers (232)	Government employee (35)	Private employee (33)	F	p
Happiness	11.89 (1.680)	11.91 (1.721)	11.61 (1.767)	0.430	0.651
Stress	23.11 (3.978)	23.66 (3.360)	23.52 (5.501)	0.364	0.695
Anxiety	16.21 (2.792)	17.20 (3.376)	17.15 (3.572)	2.805	0.062
Family relationship	14.75 (2.070)	15.89 (1.728)	15.21 (1.980)	5.140	0.006**
Socialization	11.58 (2.393)	12.60 (2.032)	11.85 (2.575)	2.867	0.058
Physical health	15.57 (3.058)	16.37 (2.756)	15.36 (3.525)	1.174	0.310
Body image	11.73 (2.614)	11.83 (2.640)	12.09 (2.185)	0.294	0.746
Overall psychological status	104.84 (10.490)	109.46 (10.642)	106.79 (12.690)	3.018	0.050*

**Significant at 1% level, *Significant at 5% level, Values within bracket refer SD. SD, Standard deviation; ANOVA, Analysis of variance

Table 3: Results of psychological status in experimental and control groups based on meditation

	Mean (SD)	t	p
Meditation group (30)			
2nd trimester			
Pretest	100.20 (17.103)	2.188	0.037*
During	108.17 (19.061)		
3rd trimester			
During	108.17 (19.061)	3.550	0.001**
Posttest	119.00 (15.974)		
Control group (30)			
Pair 1			
1st trimester	2.07 (0.740)	1.361	0.184
2nd trimester	1.87 (0.681)		
Pair 2			
2nd trimester	1.87 (0.681)	1.882	0.070
3rd trimester	2.10 (0.759)		

**Significant at 1% level, *Significant at 5% level. SD, Standard deviation

scores lower during 2nd trimester as compared to 1st and 3rd trimesters.

Table 4 shows that the music intervention ($t = 0.62$, $p = 0.541$) was ineffective during the 2nd trimester. However, the score of 3rd trimester ($t = 4.00$, $p < 0.001$) indicated that Music intervention improved pregnant women's psychological status gradually.

However, no significant difference was found during all trimesters regarding pregnancy psychological status among the control group. However, the observed mean scores stated that the psychological status of pregnant women gradually scores lower during 3rd trimester compared to 1st and 2nd trimesters.

DISCUSSION

This study aimed to elicit the psychological status of pregnant women, which was assessed by the PPSS. After evaluating the psychological level, this study also analyzed the impact of music and meditation interventions to improve the psychological status of pregnant women. Based on the dimensions, significant differences were found among the occupations of the pregnant women.

The study found that pregnant women working in the government sector had better psychological status than private employees and homemakers. However, this finding contrasts with a cross-sectional study that examined maternal depression and anxiety among 324 pregnant women. The results revealed that employed pregnant women exhibited elevated levels of depression and anxiety compared to homemakers. The study further indicated a noteworthy positive correlation between the cumulative scores of depression and anxiety within the entire participant group.[23] However, the study did not observe significant differences in pregnant women's psychological status based on their living area.

Regarding meditation intervention, the pretest and posttest results of the study showed significance. At the end of the 2nd trimester, slight differences were observed in their mean value. After the 3rd trimester, pregnant women's psychological status improved from low and moderate to good psychological status. However,

Table 4: Results of psychological status in experimental and control groups based on music

	Mean (SD)	t	p
Music group (30)			
2nd trimester			
Pretest	101.37 (17.993)	0.62	0.541
During	104.43 (18.801)		
3rd trimester			
During	104.43 (18.801)	4.00	0.001**
Posttest	113.10 (18.378)		
Control group (30)			
Pair 1			
1st trimester	103.77 (16.872)	1.36	0.185
2nd trimester	98.30 (15.777)		
Pair 2			
2nd trimester	98.30 (15.777)	1.36	0.201
3rd trimester	95.07 (18.268)		

**Significant at 1% level. SD, Standard deviation

meditation showed slow improvements in the 2nd trimester and progressed better in the 3rd trimester. Hence, regular meditation is an effective coping technique for stress and anxiety and improves pregnant women's psychological status. The current findings are substantiated by a research investigation that explored the impact of diaphragmatic breathing exercises on pregnant women diagnosed with gestational diabetes, focusing on prenatal attachment and psychological state. The study revealed that implementing diaphragmatic breathing exercises positively influenced pregnant women's psychological well-being, reducing stress, anxiety, and depression levels. In addition, the practices enhanced the level of prenatal attachment between the mother and child.[24]

A study conducted in India investigated the impact of mindfulness meditation on perceived stress scores and autonomic function tests in pregnant women. The results indicate that mindfulness meditation is a strong and effective regulator of the sympathetic nervous system, reducing daily perceived stress levels among expectant mothers. Furthermore, meditation practice can avert the detrimental impacts of stress on maternal health and birth outcomes.[25]

However, the results of the pre- and posttest of the music intervention stated that after the music intervention, there was no effectiveness observed at the end of the second trimester. Still, the mean value scores were better than the pretest scores. Whereas, after the 5 months of music intervention, at the end of the third trimester, respondents showed better psychological status than 2nd trimester, and a significant difference was observed at a 1% level.

A study supported the above findings and examined the impact of music and singing intervention on maternal psychological well-being during pregnancy. The study found that both interventions positively affected the emotional state, stress, and bonding between mother and child immediately after the intervention.[26]

Music and meditation are effective interventions that help to overcome psychological stress. Hence, an attempt was made in this study to identify the psychological status among pregnant women and adopt these two interventions to see their influence on them. The results indicated that pregnancy psychological status could gradually improve through meditation intervention when the trimester progresses. Conversely, music intervention did not create an effect at the beginning. However, after the continuous therapy of 5 months, music was influential as the participants' posttest scores increased.

Study strengths and limitations

The research study conducted in Assam provides promising evidence for the effectiveness of music and meditation interventions in improving the psychological status of pregnant women. The findings highlight the importance of integrating such interventions into prenatal care programs, considering pregnant women's diverse educational and occupational backgrounds to ensure maximum benefit. Despite strengths, the study has some limitations, too. Data collection and intervention were carried out during the second wave of COVID-19, which is the study's main limitation. Limited access to data as this study focused only on the first trimester under the age group of 18–40 years. As the participants are only available for the 9th-month time limit, it is a significant limitation factor from the start of the data collection and intervention stage. It is important to note that the study focused on the psychological status of pregnant women within a specific district of Assam. Consequently, the findings cannot be generalized to encompass the psychological status of all pregnant women across India, as variations in geographical factors may influence the results.

CONCLUSION

This study examined pregnant women's psychological status based on their area of living and occupation and the influence of music and meditation on their psychological status. Both interventions played a tremendous role among pregnant women. It helped them to cope with stress and anxiety, reduce sleeplessness, improve their relationship with in-laws and husbands, reduce mood swings, improve concentration level, reduce aggressiveness and hypertension, health hazards such as nausea and dizziness, body aches, and so on. Thus, the study concluded that regular meditation, including breathing exercises and listening to music, could bring a positive mindset to pregnant women. Health-care professionals should accept that every woman differs from others and educate them on maintaining good psychological status and lifestyle modification. Further study would be done with a vast sample size combined with music and meditation and can observe the postpartum effects of this intervention.

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Author's contribution

Both authors collaboratively developed the study design, and Sharanoor Hussain was responsible for data collection and intervention implementation. However, both authors contributed to the data analysis and collaborated on manuscript preparation.

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PubMed, Google scholar, research gate, scopus index etc.

Conflicts of interest

There are no conflicts of interest.

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