The Role and Impact of Operating Theatre Background Music on Users and Patients: Opinion of Theatre Staff

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ABSTRACT

Aim: To determine the opinion of operating theatre users on the role of operating theatre background music on theatre users and patients in tertiary health care facilities in Port Harcourt.

Background: The relationship between music and health has been described by researchers. Music has been used in several hospital settings with effects which some consider beneficial and others harmful.

Materials and Methods: This cross-sectional descriptive study was carried out among theatre users from March to June 2020 in two multispecialty tertiary healthcare facilities in Port Harcourt Nigeria. Using the convenience sampling method, data collected with pretested semi-structured questionnaires were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0.

Results: One hundred and twenty-one (82.9%) respondents asserted to knowledge of relationship between music and stress hormone. 97 (66.4%) agreed that music has positive effect on workers in the operating theatre. One hundred and seventeen (80.1%) respondents were of the opinion that background music in the operating theatre is not a distraction, while 22 (15.1%) respondents felt otherwise. One hundred and forty-four (98.8%) respondents agreed to usefulness of background music while at work. High proportion of respondents who lack knowledge of the relationship between stress hormone and music had no preference for operating theatre background music and the relationship was statistically significant ($P < 0.05$).

Conclusion: Operating theatre background music is useful as opined by the majority of operating theatre staff, though its preference is low among those with less knowledge of the positive relationship between such music and stress hormones.

Keywords: Background music, healthcare facilities, Nigeria, operating theatre, tertiary Port Harcourt.

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I. INTRODUCTION

Music is a valuable art used in different parts of the world in virtually all disciplines. Different types of music have been described [1], [2] with individual having their preferences [3]-[6]. Some features are, however, common to all music: a combination of sounds that are pleasant to the ear; [7]-[9] carries a message; [10]-[13] and an expression evoking some emotion [14]-[19]. Music is considered background when it is not intended to distract attention from the focus of activity [20], [21]. A study demonstrated significant improvement in task performance among a set of primary school pupils exposed to calm relaxing background music compared to the control [22]. In this same study, music that was unpleasant, arousing, and aggressive negatively affected performance

[22]. Also, in restaurant business, background music has been reported to have positively affected purchases and length of stay of customers [23].

The relationship between music and health has been described by researchers [24]-[28]. In a narrative review, a researcher reported that compared to silence, use of soothing music could reduce stress and blood pressure among patients and caregiving nurses [29]. Music has been used in hospital setting among children, [30]-[33] in supportive cancer care, [34], [35] in psychiatric patients, [36] among the mentally retarded, [37] for the elderly for psychologic wellbeing, [38] in hospital waiting rooms, [39] for relieving anxiety in preoperative setting, [40] in intensive coronary care unit, [41] in anxiety care among the terminally ill [42], [43] and for anxiety and pain care [44]-[46]. A proposal has been made for music usage in many hospital settings [47].

The opinion of theatre users in our environment on the use of music in theatre has not been ascertained and needs to be studied since music appreciation differs in different settings and among different persons. The knowledge of background theatre music, the benefits (or otherwise) of background theatre music, and the opinions and preferences of theatre users in our environment on the subject were investigated and presented in this study.

II. MATERIALS AND METHOD

A. Study Area

The study was carried in Port Harcourt the capital of Rivers State, one of the Niger Delta States in the Federal Republic of Nigeria.

B. Study Place and Period

The operating theatres and the specialist surgical outpatient clinics of University of Port Harcourt Teaching Hospital (UPTH) and the Rivers State University Teaching Hospital (RSUTH) in Port Harcourt were the places the study was carried out, between March 2020 and June 2020.

C. Study Design

A cross-sectional descriptive study.

D. Study Population

The study was carried out among theatre users comprising surgeons, anaesthetists, theatre nurses, technicians, and students.

E. Sample Size Determination

The minimum sample size of 146 (about half of the total population) was determined based on a projected total available theatre users' population of about 300.

F. Sampling Technique Procedure

The convenience sampling method was used to recruit respondents among all the theatre users present at the tertiary health facility who gave consent for the study. A total of two hundred and fifty (250) self-administered semi-structured questionnaires intended for the study were distributed (with effort made to avoid double administration) between March 2020 and June 2020, and one hundred and forty-six (146) were retrieved.

G. Data Analysis

Information on socio-demographic characteristics; role, knowledge, uses of music; impact of operating theatre background music on theatre users; and opinion on operating theatre background music for action; were collated and analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0.

III. RESULTS

A total of 146 respondents were recruited for the study. The demographic characteristics as in Table I showed that majority of the respondents were persons over 25 years of age, and those who have spent more than 10 years in service. The male-female ratio of respondents was almost equal, and the surgeons were more in number than any other category of

theatre users.

TABLE I: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STAFF

RESPONDENTS		
Variables	Frequency	Percentage
<i>Sex</i>	146	100
Male	74	50.7
Female	72	49.3
<i>Age</i>	146	100
Less than 25 years	6	4.1
25-40 Years	69	47.3
41-60 years	71	48.6
<i>Marital Status</i>	146	100
Single	44	30.1
Married	101	69.2
Divorced	1	.7
<i>Years in service</i>	146	100
Less than 1 Year	20	13.7
1-10 years	45	30.8
11-20 years	66	45.2
21-30 years	13	8.9
More than 30 years	2	1.4
<i>Religion</i>	146	100
Christianity	141	96.6
Islam	5	3.4
<i>Health staff category</i>	146	100
Surgeons (All Specialties)	60	41.1
Anesthetist	14	9.6
Theatre nurse	49	33.6
Others (Technician, Etc.)	23	15.8
<i>Place of work</i>	146	100
UPTH	105	71.9
RSUTH	41	28.1

Table II shows the opinion of respondents on the knowledge and role of music. One hundred and forty-one (96.6%) respondents love listening to music at home. Additionally, 121 (82.9%) asserted to knowledge of relationship between music and stress hormone. One hundred and fifteen (78.8%) respondents asserted positively to knowledge of the relationship between music and mood, while 97 (66.4%) agreed that music has positive effect on workers in the operating theatre.

TABLE II: ROLE, KNOWLEDGE AND USES OF MUSIC OUTSIDE HOSPITAL SETTING

Variables	Frequency	Percentage
<i>Love listening to music at home</i>	146	100
Yes	141	96.6
No	2	1.4
Don't know	3	2.1
<i>Have knowledge about relationship between music and stress hormone</i>	146	100
Yes	121	82.9
No	11	7.5
Not sure	14	9.6
<i>Have knowledge about positive relationship between music and mood</i>	146	100
Yes	115	78.8
No	15	10.3
Not sure	16	11.0
<i>Effect of music in the operating theatre</i>	146	100
Positively	97	66.4
Negatively	3	2.1
Not sure	13	8.9
Not played in our theatre	33	22.6

Table III shows the impact of operating theatre background

music on theatre users. One hundred and seventeen (80.1%) respondents were of the opinion that background music in the operating theatre is not a distraction, while 22 (15.1%) respondents felt it was a distraction. On expressing the negative impact of music, 37 (25.3%) respondents felt that music impairs ability to detect alarm/sounds from theatre machines, 10 (6.8%) asserted to possible loss of concentration, while 95 (65.1%) affirmed that it has no negative impact in the operating theatre. However, 144 (98.8%) respondents agreed to usefulness of background music while at work, 2 (1.6%) felt otherwise. Out of the total respondents who positively asserted to usefulness of background music, 39 (26.7%) felt that it calms the mind while at work, 16 (11.0%) opined that it reduces stress of official work, and 37 (25.3%) asserted to reduction in boredom of a long surgery. Fifty-two (35.6%) respondents agreed with all three options mentioned above for usefulness of music.

TABLE III: IMPACT OF OPERATING THEATRE BACKGROUND MUSIC ON THEATRE USERS

Variables	Frequency	Percentage
<i>Music in operating theatre is a distraction</i>	146	100
Yes	22	15.1
No	117	80.1
Not sure	7	4.8
<i>How music distract/disturbed work</i>	146	100
Causes loss of concentration	10	6.8
Impairs ability to detect alarm/sounds from theatre machines	37	25.3
Impairs communication among colleagues in theatre	4	2.7
No distraction	95	65.1
<i>How music helps while at work</i>	146	100
Calms the mind while at work	39	26.7
Reduces stress of official work	16	11.0
Reduces the boredom of a long surgery	37	25.3
All of the above	52	35.6
None	2	1.4

Table IV shows the preferences and opinions of respondents on operating theatre background music for action. One hundred and four (78.1%) respondents indicated

positive preference for operating theatre background music at work, while 27 (18.4%) respondents affirmed in the negative. In defining background theatre music, the assertions were: music must not hinder ability to hear and listen to one another – 28 (19.2%) by respondents; music that does not hinder ability to detect monitors' alarm/sound – 29 (19.9%) respondents; music that does not negatively affect ability to concentrate 42 (28.8%); and 47 (32.2%) respondents asserted to all the above options.

TABLE IV: PREFERENCES AND OPINION ON OPERATING THEATRE BACKGROUND MUSIC FOR ACTION

Variables	Frequency	Percentage
<i>Staff preference for operating theatre background music while at work</i>	146	100
Yes	114	78.1
No	27	18.5
Not sure	5	3.4
<i>Opinion on what is operating theatre background music</i>		
Does not hinder ability to hear and listen to one another	28	19.2
Does not hinder ability to detect monitors' alarm/sound	29	19.9
Does not negatively affect ability to concentrate	42	28.8
All of the above	47	32.2
<i>Opinion on what is unfavorable operating theatre music</i>	146	100
Music that hinders ability to hear and listen to one another	23	15.8
Music that hinders ability to detect monitors' alarm/sound	27	18.4
Music that negatively affect ability to concentrate	54	37.0
All of the above	42	28.8

The relationship between preference for operating theatre background music and knowledge about relationship between music and stress hormone was presented in Table V. It appears that knowledge of the relationship between music and stress hormones influence respondents' preference as high proportion of those who lack such knowledge had no preference for operating theatre background music and the relationship was statistically significant ($P < 0.05$).

TABLE V: RELATIONSHIP BETWEEN PREFERENCE FOR OPERATING THEATRE BACKGROUND MUSIC AND KNOWLEDGE ABOUT RELATIONSHIP BETWEEN MUSIC AND STRESS HORMONE

Knowledge about Relationship between Music and Stress Hormone						
Music Preference	Yes	No	Not sure	Total	(X ²)	P-Value
Yes	96(87.3%)	4(3.6%)	10(9.1%)	110	11.320	0.023
No	20(66.7%)	6(20.0%)	4(13.3%)	30		
Not sure	5(83.3%)	1(16.7%)	0(0.0%)	6		
Total	121	11	14	146		

IV. DISCUSSION

The proportion of males and females in the study is almost equal, and most respondents were in their middle age, and a sizable number had spent more than ten years in service. In a cross-cultural intercontinental study, it was found that age, country, and gender all significant influence on music listening preference [48]. We therefore reason that the almost equal distribution of the sexes of our respondents will likely remove the possible bias that differences in gender of respondents could have impacted on the results of the study.

Most respondents opined that background music in the operating theatre has no distracting effect. And for those who felt otherwise, impairment of the ability to detect alarm/sounds from theatre machines, possible loss of concentration, loss of ability to hear and listen to one another were their major concerns. These findings are in consonance with the reports from previous studies which raised issues about the use of music in operating theatre [49]-[51]. The potential effect of interference of music with personnel communication has been reported, with a call for discussions on guidance [49]-[51]. Interference of loud music with sound

of patient breathing and monitors used in the theatre is another issue of concern especially to the anesthetist [52], [53]. Low volume (soothing) music is therefore advised [54].

Almost all respondents positively asserted to the usefulness of operating theatre background music with its potential of calming the mind while at work, reduction of the stress of official work, and reduction in boredom of long surgery. Our finding is similar to a Nigerian study which demonstrated that music usage in operating theatre has the potential of reducing annoyance, distraction, and stress among theatre staff, and decreasing anxiety among patients [55]. However, our study differs from this 2010 Nigerian study in that it was carried out among both patients and health staff with a sample size of 162, while ours study was done only among theatre users with a sample size of 146.

Almost all respondents asserted to love of listening to music at home, and majority demonstrated knowledge of the relationship between music and stress hormones / mood, with some positive effects. Beneficial effect of music has been reported among pre-operative day surgery patients who demonstrated anxiety-relieving effect of music [56]. A study demonstrated cortisol (stress hormone) level reduction and reduced consumption of drugs among spinal patients who listened to music [57]. Our findings however differ from this report in that ours is the expressed opinion of theatre users. A statistically significant relationship has been seen to exist between lack of knowledge of the effect of music on stress hormones and lack of preference for operating theatre background music. This finding differs and expresses a different dimension to an already documented relationship reported to exist between music listening during spinal anesthesia and cortisol level/consumption of propofol [57].

The limitation of this study is that it is questionnaire-based, expressing opinions of theatre users. There is need in future to study and establish if the assertions of respondents are real. This may be achieved by directly testing the stress hormone levels of theatre staff before and after surgery and making comparison between those who listened to operating theatre background music, after properly matching for age and gender of participants.

This study concludes that background music is beneficial in operating theatre and is desirable to a majority of theatre users. Most theatre users did not see it as distracting, rather positively asserted to the usefulness of such music with its potential of calming the mind while at work, reducing the stress of official work, and alleviating boredom of long surgery. Those who have less knowledge of the relationship between background music and stress hormones are less likely to show preference for operating theatre background music.

V. RECOMMENDATION

Operating theatre background music should be encouraged as majority of theatre users showed positive preference for it. This recommendation is valid within the context of the meaning and use of background music.

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ETHICAL CONSIDERATIONS:

The approval of the research ethics committee of the University of Port Harcourt Teaching Hospital (UPTH) and the Rivers State University Teaching Hospital (RSUTH) were obtained before commencement of study.

CONFLICT OF INTEREST

None declared.

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