









ORIGINAL ARTICLE

Factors associated with transcendental meditation practice in older people

Fatores associados à prática da meditação transcendental em idosos

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ABSTRACT

Objective: To evaluate factors associated with the practice of transcendental meditation (TM) in the elderly.

Methods: Cross-sectional study, with the inclusion of 113 older adults and women, 60 of them practitioners and 53 non-MT practitioners. A semi-structured questionnaire was used as an instrument, composed of sociodemographic, health and TM practice data. Data analysis was performed using the chi-square test and binary logistic regression.

Results: The average age of practitioners was lower than that of non-practitioners (63.7 ± 4.0 vs. 69.1 ± 6.6 years). Most of the sample had completed higher education ($f = 45$; 75%; $p = 0.001$) and received more than three minimum wages ($f = 40$; 67.8%; $p = 0.001$). In the group of TM practitioners there was a greater proportion of individuals with excellent / good self-perceived health (91.7% vs 77.4%; $p = 0.034$), and less hospitalization in the last semester (5% vs 24.5 %; $p = 0.003$). Older adults who denied hospitalization or the presence of diabetes mellitus (DM) presented, respectively, 5.7 (95% CI OR 1.1 - 28.9) and 4.9 (95% CI OR 1.3 - 19.2) times chance to practice MT. The practice of TM is 80% more likely to be practiced by older adults with better self-perceived health (OR 0.17; 95% CI 0.03 - 0.96).

Conclusion: The practice of a holistic activity such as TM is associated with better self-perceived health than older adults of the same age, and less chance of hospitalization in the last semester and the presence of DM.

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PALAVRAS-CHAVE

Autoimagem
Envelhecimento
saúdável
Idoso
Meditação
Nível de saúde
Saúde holística

RESUMO

Objetivo: Avaliar fatores associados à prática da meditação transcendental (MT) em idosos. **Métodos:** Estudo transversal, com a inclusão de 113 idosos de ambos os sexos, 60 deles praticantes e 53 não praticantes de MT. Utilizou-se como instrumento um questionário semiestruturado, composto por dados sociodemográficos, de saúde e da prática da MT. A análise dos dados foi realizada pelo teste do qui-quadrado e pela regressão logística binária.

Resultados: A média de idade dos praticantes foi menor que a dos não praticantes ($63,7 \pm 4,0$ vs. $69,1 \pm 6,6$ anos). A maioria da amostra havia concluído o ensino superior ($f = 45$; 75% ; $p = 0,001$) e recebia mais de três salários mínimos ($f = 40$; $67,8\%$; $p = 0,001$). No grupo de praticantes de MT houve uma maior proporção de indivíduos com excelente/boa autopercepção de saúde ($91,7\%$ vs. $77,4\%$; $p = 0,034$), e menor internação hospitalar no último semestre (5% vs. $24,5\%$; $p = 0,003$). Idosos que negaram internação hospitalar ou presença de *diabetes mellitus* (DM) apresentaram, respectivamente, 5,7 (IC95% OR 1,1 - 28,9) e 4,9 (IC95% OR 1,3 - 19,2) vezes chance de praticar MT. A prática da MT é 80% mais provável de ser praticada por idosos com melhor autopercepção de saúde (OR 0,17; IC95% 0,03 - 0,96).

Conclusão: A prática de uma atividade holística como a MT está associada à melhor autopercepção de saúde comparada à dos idosos da mesma idade, e menor chance de internação no último semestre e presença de DM.

INTRODUCTION

The progressive increase in the older adult population associated with the significant challenges of contemporary society has led to an increasing search and interest in meditative practices as an alternative to improve general well-being. These practices enable to manage physical and psychological stress and provide the subjects with a better quality of life and favor active, successful aging^{1,2}.

Meditation originated in India for more than three millennia ago. It refers to a wide variety of practices that can be defined as a set of intentional practices that lead to an altered state of consciousness characterized by increased awareness, greater presence, and a more integrated sense of self^{3,4}.

Although there are different meditation techniques, according to Hartley et al.³ all of them are based on four main practices: repetition of a mantra, listening to breathing, self-directed mental practices, and thought separation. Therefore, meditation is considered a preventive strategy that favors the emotional dimension of healthy aging and reduces the negative impact of senility, since it minimizes stress, improves the maintenance of cognitive abilities and regulates the older adults' emotions⁵.

Among the main meditation techniques, the transcendental meditation (TM) is highlighted, which is based on Hindu teachings and involves 20 minutes of daily passive concentration by using mantras to minimize and block distracting thoughts in order to provide physical relaxation, mental calmness and promote the altered state of consciousness^{2,3}.

According to Lima, Oliveira and Godinho¹, in addition to its therapeutic value, meditation also has educational and transformative significance, which may be especially important for older adults, since it contributes to the mobilization of deeper coping and healing resources.

The vast majority of studies focus on

cardiovascular risk factors, sleep disorders, depression, pain control, mental health and dementia²⁻⁵. Some of the benefits of this practice are reduced systolic and diastolic blood pressure, increased survival³, significant gains in depression levels and positive changes in cognitive, emotional, physical and behavioral dimensions¹.

However, the literature still lacks studies on meditation practice, including because its direct effects on health conditions are not yet fully elucidated. Thus, the present study aimed to assess the older adults' health conditions associated with TM practice.

METHODS

This is a transversal observational study approved by the Research Ethics Committee of the *Centro Universitário Metropolitano de Maringá*, under decision number 2.986.425/2018.

Subjects

This study was conducted using an intentional convenience sampling that comprised 113 older adults (60 years of age and older) of both sexes, divided into two groups (TM practitioners and non-TM practitioners). The first lived in different cities in Brazil, and the later ones used to go to parks in the municipality of Maringá, Paraná, Brazil. Participants were selected non-probabilistically and for convenience. This procedure was done due to the difficulty of finding older adults TM practitioners.

The older adults TM practitioners should practice the modality for at least three months, twice a day, and for 20 minutes each session, as recommended.

The Mini Mental State Examination (MMSE) was used to exclude older individuals with possible cognitive deficits. The MMSE consists of questions

grouped into seven categories: temporal orientation, spatial orientation, three-word register, attention and calculation, three words recalling, language and visual constructive ability⁶. Cut-off points used for exclusion by the MMSE were as follows: 17 for the illiterate; 22 for the older adults with 1-4-year-education level; 24 for those with 5-8-education level and 26 for the subjects who had studied for nine years or longer. These cut-off points were based on the criteria by Brucki et al.⁷, which correspond to the average obtained by these authors for each education level, minus one standard deviation. The older adults who were classified under the cut-off point specific for their education level were excluded.

Older adults who practiced another holistic modality besides TM were also excluded. None of the older adults were undergoing psychological therapy. There was no loss of sample. All those invited to participate agreed and met the inclusion criteria.

Instruments

Sociodemographic, health and TM profiles (the latter, only for the TM group) were assessed by applying a questionnaire structured by the authors themselves. It consisted of questions regarding age group (60-70-year-old, 71-80-year-old, 81-89-year-old), sex (male, female), marital status (having a partner or not), self-reported skin color (white, black, yellow, brown), education (illiterate, incomplete elementary education, complete elementary education, complete high school, higher education), monthly income in minimum wage (MW) referring to the year of 2018 (1-2 MW, 2-3 MW, more than 3 MW), retirement (yes, no), self-perceived health (excellent, good, fair, poor), comparison of health with people of the same age (better, equal, worse), use of medications (none, 1-2 medicines, 3-4 medicines, 5 medicines or more), hospitalization within the last six months (yes, no), medical appointment within the last six months (yes, no), history of falls within the last six months, history of near-falls within the last six months (yes, no), the practice of physical exercise (yes, no), and self-reported diseases.

Procedures

First, contact was established with the TM national headquarters located in Rio de Janeiro, Brazil, to obtain a list of the older adults who had concluded the TM course, which is compulsory to people who want to learn and apply the technique. Sixty older adults were selected from this list; they lived in different cities of the country. Contact with these subjects was done by telephone, and all of them agreed to participate. A Free Informed Consent Form was sent via email and signed. Then, data collection was carried out, also via telephone. The researchers performed this collection at different hours and days, according to the possibility of contacting the older adults.

The non-TM practitioners used to go to parks and squares in Maringá, Paraná, Brazil. According to the researchers' availability, they were approached either in the morning or in the afternoon, on different days.

The interviews were personally conducted.

Data analysis

Data analysis was performed by using the SPSS software (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.) with a descriptive and inferential statistics approach. Frequency and percentage constituted the descriptive measures for the categorical variables. Pearson's chi-squared test (X^2) was used to ascertain possible differences in the ratios of health conditions according to meditation practice. Binary Logistic Regression (crude and adjusted analysis) was used to verify the older adult's health conditions (independent variables) associated with meditation practice (dependent variable). For modeling the regression analysis, only the variables that showed a significance level equal to or lower than 0.20 in the X^2 test were considered. The model fitting was verified through the Hosmer-Lemeshow test. The significance value of $p < 0.05$ was adopted. Also, a post hoc statistical power analysis in G*Power 3.1.9 software⁸ revealed the statistical power to be 78.17% based on the sample of 113 participants, for an odds ratio higher than 1.8.

RESULTS

This study evaluated 113 older adults of both sexes, with a mean age of 66.3 ± 6.0 years, that is, 60 TM practitioners (63.7 ± 4.0 years) and 53 non-TM practitioners (69.1 ± 6.6 years). Most of these subjects were between 60 to 69 years of age ($f = 53$; 88.3%; $p = 0.001$), had concluded higher education ($f = 45$; 75.0%; $p = 0.001$) and earned more than three minimum wages ($f = 40$; 67.8%; $p = 0.001$). There was a higher prevalence of non-TM practitioners who were retired ($f = 36$; 67.9%; $p = 0.014$).

When comparing health conditions according to meditation practice (Table 1), in the TM practitioners group there was a higher rate of excellent/good self-perceived health (91.7% vs 77.4%; $p = 0.034$) and better self-perceived health compared to that of the older adults of the same age (66.7% vs 23.1%; $p = 0.001$). A higher proportion of non-TM practitioners regularly used to take more than two medicines daily (54.7% vs 25.0%; $p = 0.002$) and had been hospitalized in the last semester (24.5% vs 5.0%; $p = 0.003$). When comparing the ratio of the diseases (Table 2), a higher proportion of TM practitioners reported absence of arterial hypertension (81.7% vs 50.9%; $p = 0.001$), diabetes mellitus (91.7% vs 59.6%; $p = 0.001$) and osteoarthritis (90.0% vs 73.6%; $p = 0.023$).

According to the logistic regression crude analysis (Table 3), there was a statistically significant association of TM practice with self-perceived health, self-perceived health compared to that of the older adults of the same age, hospitalization within the last semester, presence of hypertension, diabetes and osteoarthritis. After adjustment of all the variables (Table 3), only the self-perceived health compared to that of the other adults of the same age, hospitalization within the last semester and presence

of diabetes remained associated with the TM practice ($p < 0.05$). It is worth mentioning that the older adults who reported not being in a hospital and not having diabetes showed, respectively, 5.699 (95%CI OR 1.124 - 28.895) and 4.931 (95%CI OR 1.266 - 19.214) times

more likely to practice TM. Furthermore, TM practice is 80% more likely to be practiced by older people with better self-rated health (OR 0.173; 95%CI 0.031 - 0.964).

Table 1 - Comparison of health condition ratios of TM and non-TM practitioner older adults in Maringá, Paraná, Brazil (2018).

Variables	TM (n = 60) f (%)	NTM (n = 53) f (%)	χ^2	p-value
Self-perceived health				
Excellent/Good	55 (91.7)	41 (77.4)	4.508	0.034
Regular/Bad	5 (8.3)	12 (22.6)		
Self-perceived health compared to that of other older adults*				
Better	40 (66.7)	12 (23.1)	19.040	0.001
Equal	16 (26.7)	29 (55.8)		
Worse	4 (6.6)	11 (21.2)		
Medications				
None	15 (25.0)	6 (11.3)	9.841	0.002
1 to 2	30 (50.0)	18 (34.0)		
More than 2	15 (25.0)	29 (54.7)		
Hospitalization within the last semester				
Yes	3 (5.0)	13 (24.5)	8.830	0.003
No	57 (95.0)	40 (75.5)		
Medical appointment within the last semester				
Yes	42 (70.0)	41 (77.4)	0.781	0.377
No	18 (30.0)	12 (22.6)		
Falls				
Yes	2 (3.3)	4 (7.5)	0.994	0.319
No	58 (96.7)	49 (92.5)		
Near-falls				
Yes	11 (18.3)	13 (24.5)	0.646	0.422
No	49 (81.7)	40 (75.5)		
Physical exercise practice				
Yes	50 (83.3)	45 (84.9)	0.052	0.820
No	10 (16.7)	8 (15.1)		

f, absolute frequency; χ^2 , chi-squared test; *Variables with missing values; TM, transcendental meditation practitioners; NTM, transcendental meditation non-practitioners.

DISCUSSION

The present study aimed at assessing the factors associated with TM practice in older adults. The main findings evidenced the association of TM practice with some health conditions. The main result of the present investigation was that older adults who practice TM perceive themselves with good health, that is, better self-perceived health compared to that of the older adults of the same age, with a history of hospitalization within the last semester, who have arterial

hypertension, diabetes and osteoarthritis. These findings corroborate with the literature and highlight that health is a notable reason why older adults seek holistic activities⁹⁻¹¹.

Therefore, TM is associated with reduced stress, cognition maintenance, improved sleeping, regulated emotions, and muscle and mind relaxation. These findings corroborate with the literature, where several authors suggest that TM is associated with a better lifestyle, decreased weight and increased insulin resistance, like other exercise modalities^{2,11-13}.

Table 2 - Ratio of self-reported diseases of TM and non-TM practitioners older adults in Maringá, Paraná, Brazil (2018).

Variables	TM (n = 60) f (%)	NTM (n = 53) f (%)	χ^2	p-value
Heart Disease				
Yes	10 (16.7)	10 (18.9)	0.094	0.760
No	50 (83.3)	43 (81.1)		
Arterial Hypertension				
Yes	11 (18.3)	26 (49.1)	12.062	0.001
No	49 (81.7)	27 (50.9)		
Stroke				
Yes	1 (1.7)	2 (3.8)	0.483	0.487
No	59 (98.3)	51 (96.2)		
Diabetes*				
Yes	5 (8.3)	21 (40.4)	16.054	0.001
No	55 (91.7)	31 (59.6)		
Cancer				
Yes	2 (3.3)	0 (0.0)	1.798	0.180
No	58 (96.7)	53 (100.0)		
Osteoarthritis				
Yes	6 (10.0)	14 (26.4)	5.206	0.023
No	54 (90.0)	39 (73.6)		
Respiratory diseases				
Yes	1 (1.7)	0 (0.0)	0.891	0.345
No	59 (98.3)	53 (100.0)		
Depression				
Yes	6 (10.0)	8 (15.1)	0.673	0.412
No	54 (90.0)	45 (84.9)		
Osteoporosis				
Yes	6 (10.0)	8 (15.1)	0.673	0.412
No	54 (90.0)	45 (84.9)		

f, absolute frequency; χ^2 , chi-squared test; *Variables with missing values; TM, transcendental meditation practitioners; NTM, transcendental meditation non-practitioners.

Training in mind-body techniques, such as TM, may have the potential to counter effects employee stress. Such techniques could, in theory, provide older adults with a practical tool for mitigating or reducing the impact of ongoing stimulation of the “fight-or-flight” response in the face of chronic psychosocial stressors¹⁴.

Other investigations, whose sample was adjusted for all the variables, showed that only the self-perceived health compared to that of the older adults of the same age, hospitalization within the last semester and diabetes remained associated with TM practice.

It can be supposed that older adults who had a hospitalization history and the presence of some disease have difficulty inserting themselves in these types of activity as they may consider pharmacology the only mean of cure. These findings corroborate with those found by other authors^{1,11,12} regarding healthy older people. On the other hand, this was not evident in older adults with associated diseases, perhaps because meditation is a new modality and few health

professionals have mastered its practice, in addition to be an alternative means of healing.

Also, for rigorous scientific assessment and dissemination, the TM program's important advantages include a standardized and reproducible instruction format, a thorough certification program for instructors, and widespread availability of instructors in virtually all population centers. Performed while sitting in a comfortable position, the mental technique allows the mind to experience more satisfactory levels of the thinking process and achieve a deep relaxation state¹⁴. Not all people have the time, mood and focus for this type of activity.

Recent researches stated that one of the most important non-pharmaceutical products for healthy aging is physical exercise¹⁵⁻¹⁷. Chételat et al.⁴ argue that changing lifestyles through non-pharmacological methods as TM is the best way to longevity. The authors state that meditation is linked to stress reduction in older adults and provides them with mental and cerebral health, and psychological well-being. Thus, TM is a practice that should be addressed to the older

Table 3 - Binary Logistic regression of health conditions (crue and adjusted) associated with the older adults TM practitioners (reference group) in Maringá, Paraná, Brazil (2018).

Variables	Crude OR [95%CI]	Adjusted OR [95%CI]
Self-perceived health		
Excellent/Good	1.00	1.00
Regular/Bad	0.311 [0.101-0.951]*	0.427 [0.096-1.889]
Self-perceived health compared to other older adults		
Better	1.00	1.00
Equal	0.166 [0.068-0.402]*	0.175 [0.059-0.519]*
Worse	0.109 [0.029-0.406]*	0.173 [0.031-0.964]*
Medications		
None	1.00	1.00
1 to 2	0.667 [0.219-2.028]	1.552 [0.370-6.510]
More than 2	0.207 [0.067-0.643]	0.574 [0.124-2.659]
Hospitalization within the last semester		
Yes	1.00	1.00
No	6.175 [1.651-23.089]*	5.699 [1.124-28.895]*
Arterial Hypertension		
Yes	1.00	1.00
No	4.290 [1.839-10.007]*	1,711 [0.523-5.600]
Diabetes mellitus		
Yes	1.00	1.00
No	7.452 [2.556-21.725]*	4.931 [1.266-19.214]*
Osteoarthritis		
Yes	1.00	1.00
No	3.231 [1.140-9.152]*	3.124 [0.861-11.339]

*p-value < 0.05; OR, odds ratio.

adults, since they are more prone to practice activities of lower intensity¹⁸.

When analyzing the proportions of diseases reported by the elderly as a result of the practice of TM, a decrease in the prevalence of reporting associated diseases was noted. These findings corroborate with the literature, with an evident association of TM with the improvement of cardiovascular function, depression, diabetes and pain control^{2-5,11,12}. Poisnel et al.⁵ support the idea that meditation comprises factors that prevent and delay aging-related illnesses and disabilities. Therefore, meditation can provide the elderly with psychological well-being, in addition to physical and social health.

Although the findings of the present investigation are consistent with the literature²⁻⁵, some of its limitations should be considered. This is a cross-sectional study, which prevents the authors from inferring causality. Moreover, older adults who practice TM are from different cities in Brazil. Thus, cultural and regional issues might be biases of data confusion. The groups are not homogeneous in their entirety, which makes some comparisons difficult. For example, the TM group is younger and less likely to retire, and these

differences are not due to MT. However, they help explain the findings. Further, non-probabilistic sampling is also a limitation that can bias the logistic regression analysis; however, a posteriori power of the analysis was calculated, which revealed a partially acceptable value. Therefore, further research related to these themes is suggested to consolidate this gap in the literature and improve the adherence of older adults in TM programs.

CONCLUSION

The practice of a holistic activity such as TM was associated with self-perceived health compared to that of the older adults of the same age, hospitalization within the last semester, and diabetes presence. From the practical point of view, the practice of some activities, such as meditation, is essential for maintaining physical and mental health during aging, together with healthy life habits, since some health conditions related to older adults have been associated with TM practice.

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