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Enriching Psychosocial Wellbeing Among Senior Citizens Residing at Geriatric Homes: Role of Pranayama – A Breathing Technique

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Abstract

Introduction: Nadi Shodana Pranayama is one of the safe and effective forms of breathing technique to boost the psychosocial wellbeing of the elderly and it will uplift their quality of life too. This study aimed to identify the effect of Nadi Shodana Pranayama on the psychosocial wellbeing of institutionalized elderly, as they have weak social connections and relationships, lack of family care, and financial dependence.

Material and Methods: This was a cross-sectional study conducted in South India among the senior citizens residing at geriatric homes or centres. One-group pre-test – post-test design was used for the study. The elderly clients recruited after a primary assessment and they have received 10 weeks of Nadi Shodana Pranayama (alternate nostril breathing) A post intervention, assessment conducted 3 weeks after the intervention. Carol D. Ryff Psychological Wellbeing (PWB) Scale used to assess the psychosocial wellbeing of the elderly during pre-intervention and post-intervention phase. Statistical analysis was done using SPSS v25.

Results: Psychosocial wellbeing among the elderly who participated in the study was improved substantially after the intervention, relative to their pre-intervention condition (($P < 0.001$; effect size=0.950).

Discussion: Psychosocial wellbeing has significantly improved after the intervention among study participants, compared to their pre-intervention state. The present findings brought out evidence in suggesting the effect of Alternate Nostril Breathing (Nadi Shodana Pranayama) in promoting psychosocial wellbeing among the elderly.

Conclusion: As people, age their social skills and behaviour significantly deteriorate and change, along with their physical health issues. Older individuals are typically classified as belonging to a "hidden community". Nadi Shodana Pranayama is a safe and cost-effective non-pharmacological intervention to improve the psychosocial wellbeing of elderly clients.

Keywords: psychosocial wellbeing, senior citizens, geriatric homes, pranayama

1. Introduction

A.Necessity of Study

Population growing older has been spotted as one of the global demographic megatrends. It will bring about endured and lasting influences on sustainable development. As per the current estimates on the world population, there were approximately 703 million persons aged sixty-five years or over in 2019. "The number of older persons is projected to double to 1.5 billion in 2050" [1, 2, 3]. Globally, the percentage of elderly has been increased to 9 in 2019, and it will become 16 by 2050. More than 24.9 million elderly people live alone or widowed, and this number accounts for 24 % of the elderly population in India [4].

As individuals become aged, there are a significant deteriorations and adjustments in their social skills and behaviour in conjunction with physical problems. The older peoples usually categorized as "hidden community "because they are maintaining very few social contacts and networks of family friends [5]. The variables, such as, retirement, medical issues, widowhood, and familial conflicts are the major risk factors for the psychosocial distress among elderly clients [6]. Disruption in the psychosocial wellbeing of the elderly leads to a series of problems (depression, loneliness, decreased self-esteem, poor communication etc.) which make their life miserable [7]. Apart from the psychosocial issues, the ability of the brain to transmit and receive signals also reduced with aging; moreover, it may accelerate the maladjustments in psychosocial domains of life among the elderly peoples. The prevalence of negative self-concept and low levels of self-esteem are more in institutionalized elderly than the non-institutionalized [8, 9].

Well-being is a multidimensional concept, and a low subjective well-being score is associated with lower life quality among the elderly [10]. Individual self-esteem and environmental mastery are the essential assets for conferring psychosocial prosperity among the elderly [11, 12]. As medications not usually recommended for the management of emotional distresses among the elderly population, we need to identify an effective intervention for retaining the psychosocial wellbeing of the older adults [13]. Complementary and Alternative Therapy (CAT) has accepted as one of the safer interventions in geriatric care, and it will promote the empowerment of older age clients 14. Most of the Complementary and Alternative therapies will improve self-reliance and self-esteem [15, 16, 17].

"Pranayama" or "yogic breathing" is one of the vital yogic techniques and may improve physiological and psychological health through the down regulation of the hypothalamo-pituitary adrenal (HPA) axis and the sympathetic nervous system [18, 19]. Moreover, pranayama is one of the safest yoga techniques, and it can safely administered to older adults under supervision. Among the different types of breathing techniques, "Nadi Shodana Pranayama" effectively decreases the basal sympathetic tone and increases parasympathetic activity. Nadi Shodana Pranayama" imposes a calming effect on the body and mind and helps the individual to reduce their stress level [20, 21].

B. Study Purpose

Alternate-nostril breathing technique ("Nadi Shodana Pranayama") is a slow breathing (pranayama) technique, so it can be administered safely in the older adult [22]. The "Nadi Shodana Pranayama" will increase the amplitude of P300 at the frontal and parietal sites [23] thus; it is a quite effective intervention for improving memory and other cognitive functions of older adults. Thus, evidence suggests that Alternate-nostril breathing technique (Nadi Shodana Pranayama) is an effective technique to boost up the psychosocial well-being and quality of life of older adults. To the best of investigators knowledge, there is a scarcity of research on the effect of Alternate-nostril breathing technique (Nadi-Shodana Pranayama) on the psychosocial wellbeing of the older adults, especially the institutionalized elderly. Considering the significance of psychosocial wellbeing for health promotion among older adults, in this study we intended to identify the effect of Nadi Shodana Pranayama on the psychosocial wellbeing of institutionalized elderly, as they have poor social interactions and relationships, lack of care from the family, financial dependency when compared to the elderly living in the home[24]. We hypothesized that the Nadi-Shodana pranayama will enhance the psychosocial well-being of older

1. Methods

A. Study Design

This was a quasi-experimental study conducted among the senior citizens residing at various geriatric centres at South India in the year 2021.

B. Study Participants

The study conducted in 14 old age homes approved by Government authorities in Kerala, a southern state of India. Individuals aged ≥ 60 years, residing at the selected old age homes, were included to in this study. A non-probability quota sampling used to recruit the participants for the study. The investigators have sent a letter for seeking permission to the selected old age home. After getting the official approval from the concerned authorities, the investigators were visited the facility and conducted the baseline line assessment to recruit the samples for the study. According to Kerala disability census and report on survey of aged, 6022 old age persons are residing in old age homes of Kerala, India 27. Based on this data, the sample size of the present study was derived. The calculated sample size was 362 older adults with 5% margin of error (absolute error) and 95% confidence interval. Considering possible sample attrition, 372 older adults were recruited for this study.

C. Intervention

Alternate Nostril Breathing (Nadi Shodhana Pranayama) 25 administered to the study participants who resides at the old age homes during the period from September 2021 to April 2023. Alternate Nostril Breathing (Nadi Shodhana Pranayama) demonstrated by the investigators (certified to teach pranayama) until the participants get proficiency to perform the technique correctly without assistance. The Nadi Shodhana Pranayama was practiced by the study participants in the early morning (the morning sessions usually starts at 7.30 am) and immediately after the sunset (the evening sessions usually starts at 7.30 pm) for a period of 10 weeks. Each session consists of 3-5 cycles of pranayama activity. Participants were performing the intervention for 20 minutes during each session and complete a daily intervention log. The sessions were conducted under the close supervision by the investigators and the health care personnel available at the old age homes [Table 1]. If any of the participants missed a session, the facilities for individual training arranged. Moreover, 10-15 minutes of face-to-face interaction arranged with the participants in order to maintain the adherence. The sessions were administered at free of cost and arranged an interaction session for the participants twice in a week.

Table 1 Alternate Nostril Breathing (Nadi Shodhana Pranayama) -Level 1

Step	Activity
1.	Sit in a comfortable and relaxed upright position and make “Migri Mudra” (if possible “Padmasana” posture).
2.	Close the eyes.
3.	Concentrate on the normal breath for 2-3 minutes.
4.	Lift right hand and place the middle and index finger between the eyebrows.
5.	Close the right nostril with the thumb.
6.	Inhale deeply through the left nostril and close it with right little finger.
7.	Open the right nostril and exhale slowly through it.
8.	Close the left nostril with right ring finger.
9.	Inhale deeply through right nostril.
10.	Open the left nostril and exhale slowly through it.
11.	Return the hand to “Migri Mudra” again and concentrate on the breath 2-3 minutes.

**The above-mentioned procedure steps indicate one cycle of Nadi Shodahana Pranayama.*

**Repeat the cycle 3 to 5 times in a session*

D. Measures

Psychosocial well-being of the study participants measured using the Carol D. Ryff Psychological Wellbeing (PWB) Scale. An 18-item self-administered questionnaire that aims to evaluate psychosocial well-being of older adults under five subscales: autonomy, environmental mastery, personal growth, positive relations, purpose in life, and self-acceptance 26. The above-mentioned measures of psychosocial wellbeing support translated and validated in Malayalam (Regional language).

E. Ethical Considerations

After gaining clearance (Reference No.NCONIRB/2021-22/A/12) from the research and ethics committee of the National Hospital College of Nursing, this study was carried out. The investigators obtained a written consent by verbally explaining the study procedure and interventions to the participants. During the consent process, the investigator explained that the data collected would be kept confidential and used only for research purposes. Participants were free to stop taking part in the study whenever they wanted to without incurring any consequences.

F. Data Collection

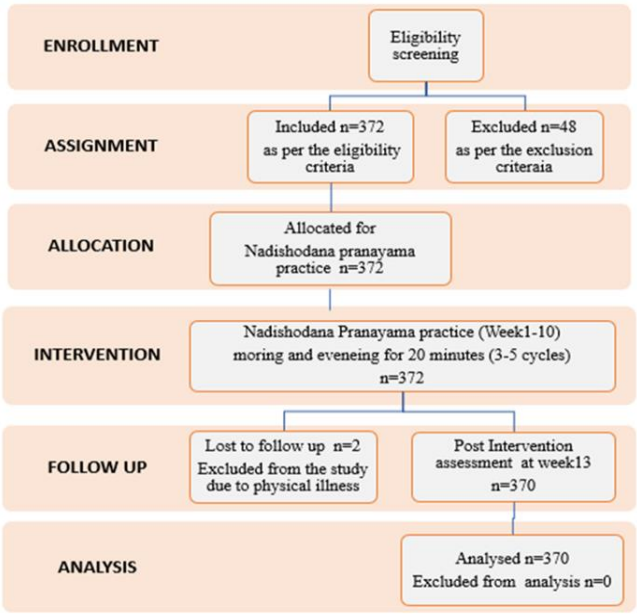
A pre-test was conducted by the investigators immediacy after the recruitment and before starting the intervention. Data was collected through interview method. The post intervention assessment conducted at the 13th week. An independent data collector, who was not involved in the intervention and pre- data collection phase, made the post intervention data collection.

G. Data Analysis

The statistical analysis was performed by using SPSS (SPSS v25) with the level of significance $\alpha = 0.05$. Shapiro-Wilk Test is used to ensure the normality of the data. A paired‘t’ test was used to identify the effect of

the Nadi Shodhana Pranayama on the psychosocial wellbeing of the elderly. A p value of < 0.05 was considered statistically significant.

2. Results



A. Follow-up

Out of 372 participants, two were withdrawn during the time of follow-up as they became physically ill. Hence, the data of 370 participants who successfully completed the pre-test, intervention and post-test were included for analysis and interpretations [Figure 1.]

B. Demographic characteristics and psychosocial wellbeing

The mean age of the study participants was 74(±6.5) years. Majority of the subjects were females (54.86%).). Other demographic characteristics and its association with psychosocial wellbeing are presented. There is a significant association between most of the demographic characteristics and psychosocial wellbeing ($P < 0.05$) [Table 2].

Table 2: Demographic characteristics of The Study Participants

Characteristics		**Value (n=370)**	**Test result**	**P value**
Age (year)		76.4± 6.0	[a]$\chi 2$=4.710 [b]r = 0.409	0.029 < .001
Gender	Male Female	167(45.1) 203(54.9)	a$\chi 2$=6.179	0.129
Type of family	Nuclear Extended	184(49.7) 186(50.3)	a$\chi 2$=8.894	0.002
Marital Status	Married Unmarried Widow/Widower Separated/Divorced	31(8.4) 15(4.1) 292(78.9) 32(8.6)	a$\chi 2$=13.97	0.003
Number of children (Alive)	One Two More than two Nil	96(26.0) 135(36.5) 107(28.9) 32(8.6)	a$\chi 2$=27.19 br= -0.667	< 0.001 < 0.001
Educational status	No formal education Primary school High School	15(4.1) 42(11.4) 215(58.1)	a$\chi 2$=28.33 br= -0.500	0.001
Monthly Income	Below ₹ 2000 ₹ 2001 – 6000 ₹ 6001-10000	111(30.0) 100(27.0) 30(8.1)	a$\chi 2$=13.41 br= -0.500	0.009 < 0.001

Figure1. Flow diagram of the participant enrolment, allocation, intervention, follow-up and analysis

	Above ₹ 10000 No Income	4(1.1) 125(33.8)		
Source of Income	Government support Pension Savings others Not Applicable	111(30.0) 98(26.5) 12(3.2) 24(6.5) 125(33.8)	aχ2= 25.42	0.000
Duration of stay at old age home (years)		2±1.2	aχ2=7.02	0.029
Participants staying with spouse		18(4.9)	aχ2=2.30 br=0.523	0.129 < 0.001

Data are presented as mean ± standard deviation or number (percentage).

[a] *Chi-square tests.*

[b]*Pearson correlation coefficient*

C.Effect of Alternate Nostril Breathing Technique (Nadi Shodhana Pranayama) on psychosocial wellbeing of the elderly

The PSW scores of elderly before and after intervention were recorded. Based on the results of paired t-test, a significant difference was found in the total score of PSW before and after the practice of Nadi shodhana pranayama (P<0.001). The total score of PSW and all its subscales (P<0.001) increased significantly after the intervention. The effect size was calculated in order to identify the effect of Nadi shodhana pranayama, and it was found to be effective (r=0.950, p< .001) [Table 3].

Table 1: ***Psychosocial Wellbeing of The Elderly before and after the practice of Nadi Shodhana Pranayama***

Subscale	**Score1[a]**	**Score2[b]**	**Paired Differences**							
			Mean	**SD [c]**	**SEM[d]**	**Test Result[e]**	**P value**	**Effect size[f]**	**95%Confidence interval**	
									Lower	**Upper**
Autonomy	11.50±1.76	13.77± 1.78	2.27	2.05	0.13	17.44	<0.000	0.906	2.52	2.01
Environmental Mastery	10.56±1.69	11.07± 3.15	0.51	3.57	0.18	2.74	0.006	0.142	0.87	0.14
Personal Growth	6.78±1.84	9.39± 2.61	2.61	3.19	0.16	15.72	<0.000	0.828	2.93	2.28
Positive Relations	7.24±2.30	9.97± 2.5	2.73	3.4	0.17	15.45	<0.000	0.802	3.07	2.38
Purpose in Life	6.81±1.81	8.31± 2.19	1.5	2.84	0.14	10.15	<0.000	0.527	1.79	1.2

Self-Acceptance	7.32±2.12	9.02± 1.96	1.7	2.88	0.15	11.32	<0.000	0.589	1.99	1.4
Total score	50.21±1.91	61.53± 1.78	11.32	2.61	0.13	83.4	<0.000	0.95	11.58	11.05

Data are presented as mean ± standard deviation
Higher scores indicate optimal psychosocial wellbeing
[a] Score 1indicates the pretest score, [b] Score 2 indicates the post test score (week13)
[c] Standard Deviation, [d] Standard Error Mean, [e]paired t -test, [d] Cohen's D, and [e] Correlation coefficient

3. Discussion

In this study, the investigators explored the effectiveness of Nadi Shodhana Pranayama in promoting psychosocial wellbeing among older adults. According to the study results, psychosocial wellbeing has significantly improved after the intervention among study participants, compared to their pre-intervention state. The present findings brought out evidence in suggesting the effect of Nadi Shodhana Pranayama in promoting psychosocial wellbeing among the elderly.

Previous studies have mainly focused on the effects of other complementary and alternative therapy modalities on the wellbeing of the elderly. To the best of our knowledge, no study has yet assessed the effectiveness of Nadi Shodhana Pranayama on promoting psychosocial wellbeing of the elderly. A.Mooventhan reported that yogic practice is an effective modality in improving physical and psychological health status of elderly clients [35]. A randomized control trail conducted by M. Ramanathan, concluded that yoga practice can improve the quality of life of elderly by improving their mental status [36].

A study conducted in Korea reported that, yoga is one of the safe and best technique for improving health-related fitness, autonomic functions, and psychosocial health of the elderly. The meditation and yogic breathing will increase the parasympathetic tone of the elderly clients and it significantly improves their quality of life. Moreover, yogic practice will reduce the depression and anxiety scores among the elderly [37]. A prospective, randomized, case control study conducted in India, shows that Preksha Meditation can improve the mental health in elderly clients. This meditation is more effective in promoting quality of life among the older adults [38].

A cross-sectional study conducted by Bankar MA, reported that routine practice of "Bandhas" (Jalandhar bandh, Mulabandha, Uddiyanbandha Anuloma-Viloma Surya Bhedan Ujjayi, and Bhramari, Pranayama) can help the elderly clients to achieve good sleep and quality of life[39]. A quasi experimental study with one group pretest-post design conducted in India, reported a significant difference in the stress level of the older adults after the practice of yogic breathing (Pranayama) [40]. The present study findings are in line with the findings of the above-mentioned studies.

A meta-analysis conducted on the effect of reminiscence on the psychological wellbeing of the older adults reported that it has an effect on the life satisfaction and emotional wellbeing of the older adults [41]. A systematic review conducted by NK Alici, described that laughter yoga interventions have a positive effect on psychosocial outcomes of older adults, such as life satisfaction, quality of life, mood, happiness, depression, loneliness, death anxiety and cognitive function [42]. These findings are supporting the results of the present study.

5. Research Implications

The findings of the present study revealed that the old age peoples living in the old age home are experiencing imbalances in their psychosocial wellbeing. The effectiveness of Nadi Shodhana Pranayama as an intervention for promoting the psychosocial wellbeing of the older adults was validated in the present study. The Nadi

Shodhana Pranayama described in the present study will reduce the caregiver role strain by promoting emotional wellbeing among the elderly. Moreover, by considering the non-pharmacological nature of pranayama, it can be safely implemented at the old age community. Hence, the geriatric care homes can use this intervention, along with their routine programs.

6.Strengths And Limitations

The present study is the first trail to identify the effect of Nadi Shodhana Pranayama on psychosocial wellbeing of the older adults. But the findings of the present study should be interpreted with caution. The present study was conducted in the single region of India. Large sample and multicentric studies are necessary for more generalization of the effect of Nadi Shodhana Pranayama on psychosocial wellbeing of the older adults. Moreover, the investigators could not conduct a long term follow up due to the time constrains.

7. Conclusion

The findings of the study revealed instabilities in the psychosocial wellbeing of the elderly. Nadi Shodhana Pranayama is the most effective and safe nonpharmacological intervention to boost up the emotional and social wellbeing of the older adults. However, we suggest further longitudinal study with a larger sample size and a multicentric approach for the better generalization of the study results.

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Institutional Review Board Statement: “The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of National College of Nursing (Reference No.IRB/2019/A/12).” for studies involving humans.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study

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Refrences

1. A.J. Auerbach, K.K. Charles, C.C. Coile, W. Gale, D. Goldman, R. Lee, C.M. Lucas, P.R. Orszag, L.M. Sheiner, B. Tysinger, D.N. Weil, J. Wolfers, R. Wong, How the Growing Gap in Life Expectancy May Affect Retirement Benefits and Reforms, Geneva Pap. Risk Insur. - Issues Pract. 42 (2017) 475–499. https://doi.org/10.1057/s41288-017-0057-0.
2. WHO | Global health and ageing, n.d. https://www.who.int/ageing/publications/global_health/en/ (accessed October 24, 2020).
3. Ageing | United Nations, (n.d.). https://www.un.org/en/sections/issues-depth/ageing/ (accessed October 24, 2020).
4. Situation Analysis Of The Elderly in India, 2011.
5. B. Cornwell, L.P. Schumm, E.O. Laumann, The social connectedness of older adults: A national profile, Am. Sociol. Rev. 73 (2008) 185–203. https://doi.org/10.1177/000312240807300201.
6. A.W.K. Chan, D.S.F. Yu, K.C. Choi, Effects of tai chi qigong on psychosocial well-being among hidden elderly, using elderly neighborhood volunteer approach: A pilot randomized controlled trial, Clin. Interv. Aging. 12 (2017) 85–96. https://doi.org/10.2147/CIA.S124604.
7. C. Segrin, Social Skills and Psychosocial Problems among the Elderly, Res. Aging. 16 (1994) 301–321. https://doi.org/10.1177/0164027594163004.
8. E. Antonelli, V. Rubini, C. Fassone, The Self-Concept in Instutional ang Non-Instutionalized Elderly People, J. Environ. Psychol. 20 (2000) 151–164. https://doi.org/10.1006/jevp.1999.0159.

9. L.P. de León, J.P.L. Mangin, S. Ballesteros, Psychosocial Determinants of Quality of Life and Active Aging. A Structural Equation Model, Int. J. Environ. Res. Public Health. 17 (2020) 6023. https://doi.org/10.3390/ijerph17176023.
10. Steptoe, A. Deaton, A.A. Stone, Subjective wellbeing, health, and ageing, Lancet. 385 (2015) 640–648. https://doi.org/10.1016/S0140-6736(13)61489-0.
11. M.I. Bisschop, D.M.W. Kriegsman, A.T.F. Beekman, D.J.H. Deeg, Chronic diseases and depression: The modifying role of psychosocial resources, Soc. Sci. Med. 59 (2004) 721–733. https://doi.org/10.1016/j.socscimed.2003.11.038.
12. B. Steunenberg, A.T.F. Beekman, D.J.H. Deeg, A.J.F.M. Kerkhof, Personality and the onset of depression in late life, J. Affect. Disord. 92 (2006) 243–251. https://doi.org/10.1016/j.jad.2006.02.003.
13. M.W. Riley, Successful aging. Gerontologist. 38 (1998) 151. https://doi.org/10.1093/geront/38.2.151.
14. Complementary and Alternative Medicine: What People 50 and Older Are Using and Discussing with Their Physicians, n.d.
15. E.Z. Anderson, Complementary Therapies and Older Adults, Top. Geriatr. Rehabil. 25 (2009) 320–328. https://doi.org/10.1097/TGR.0b013e3181bdd560.
16. M.J. Siddiqui, C.S. Min, R.K. Verma, S.Q. Jamshed, Role of complementary and alternative medicine in geriatric care: A mini review, Pharmacogn. Rev. 8 (2014) 81–87. https://doi.org/10.4103/0973-7847.134230.
17. V Abhilash, Knowledge and Attitude Of Nursing Students Towards Yoga And OtherComplementary therapies: IOSR (2018). https://doi.org/10.24941/ijcr.31174.07.2018.
18. S. Pallav, Health Impacts of Yoga and Pranayama: A state-of-the-Art Review, Int. J. Prev. Med. 3 (2012) 444–458. http://europepmc.org/article/PMC/3415184 (accessed October 24, 2020).
19. P. Raghuraj, A.G. Ramakrishnan, H.R. Nagendra, S. Telles, Effect of Two Selected Yogic Breathing Techniques On Heart Rate Variability, 1998.
20. S. Bhattacharya', U.S. Pandey, N.S. Verma, Improvement in oxidative status with yogic breathing in young healthy males, 2002.
21. V.K. Sharma, M. Rajajeyakumar, S. Velkumary, S.K. Subramanian, A.B. Bhavanani, Madanmohan, A. Sahai, D. Thangavel, Effect of fast and slow pranayama practice on cognitive functions in healthy volunteers, J. Clin. Diagnostic Res. 8 (2014) 10–13. https://doi.org/10.7860/JCDR/2014/7256.3668.
22. S. Poorna Sujini, A Study on Psychological Well Being of Elderly Living in Institutional and Non-Institutional Settings, Int. J. Pure App. Biosci. 6 (2018) 492–496. https://doi.org/10.18782/2320-7051.7146.
23. Hatha Yoga Pradipika: Chapter II. On Prâṇâyâma, (n.d.). https://www.sacred texts.com/hin/hyp/hyp04.htm (accessed October 30, 2020).
24. Psychological Wellbeing Scale | SPARQtools, (n.d.). https://sparqtools.org/mobility-measure/psychological-wellbeing-scale/ (accessed November 3, 2020).
25. Economic Review 2017 | State Planning Board, Thiruvananthapuram, Kerala, India, (n.d.). http://spb.kerala.gov.in/ER2017/web_e/ch414.php?id=41&ch=414 (accessed November 3, 2020).
26. Mooventhan, L. Nivethitha, Evidence based effects of yoga practice on various health related problems of elderly people: A review, J. Bodyw. Mov. Ther. 21 (2017) 1028–1032. https://doi.org/10.1016/j.jbmt.2017.01.004.
27. A.A. Saoji, B.R. Raghavendra, N.K. Manjunath, Effects of yogic breath regulation: A narrative review of scientific evidence, J. Ayurveda Integr. Med. 10 (2019) 50–58. https://doi.org/10.1016/j.jaim.2017.07.008.
28. Y.S. Choi, K.C. Joo, J.H. Park, Is Yoga Beneficial for Improving Physical Fitness, Autonomic Nervous Functions, and Psychosocial Health in Older Female Adults? Korean J. Heal. Promot. 12 (2016) 211–217. http://www.koreamed.org/SearchBasic.php?RID=2305072 (accessed October 31, 2020).
29. P. Sanchetee, A. Jain, H. Agarwal, Preksha Meditation and Mental Health in Elderly, n.d.
30. M.A. Bankar, S.K. Chaudhari, K.D. Chaudhari, Impact of long-term Yoga practice on sleep quality and quality of life in the elderly, J. Ayurveda Integr. Med. 4 (2013) 28–32. https://doi.org/10.4103/0975-9476.109548.

31. Mathew, a study to assess the effectiveness of selected yogic breathing techniques (pranayama) in reducing stress among senior citizens in selected old age homes at mangalore, (2013). http://localhost:8080/xmlui/handle/123456789/7991 (accessed October 31, 2020).
32. E. Bohlmeijer, M. Roemer, P. Cuijpers, F. Smit, The effects of reminiscence on psychological well-being in older adults: A meta-analysis, Aging Ment. Heal. 11 (2007) 291–300. https://doi.org/10.1080/13607860600963547.
33. N.K. Alici, A.A. Donmez, A systematic review of the effect of laughter yoga on physical function and psychosocial outcomes in older adults, Complement. Ther. Clin. Pract. (2020) 101252. https://doi.org/10.1016/j.ctcp.2020.101252.