Efficacy Of Structured Instructional Programme on Knowledge Regarding Key Facts About Primordial Prevention Among the Elderly

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Abstract:
Introduction: The onset of elderly age typically commences around 60 years. It is crucial to disseminate information among the elderly regarding key facts about primordial prevention to mitigate the mortality rate within this age group. The elderly encounter challenges such as increased time at home, a lack of physical contact with family, friends, and colleagues, prolonged periods without engaging in regular activities, and concerns about personal and others' health and mortality. Therefore, the current circumstances underscore the importance of educating the elderly and exploring diverse approaches to foster healthy aging amidst this unparalleled situation.
Methodology: A quantitative method was utilized to evaluate the efficacy of a structured instructional program on senior residents of different old age homes in the city of Hyderabad, Telangana, about their understanding of the fundamental facts and their ability to prevent occurrences. A non-probability purposive sampling technique was utilized and 30 elderly samples were chosen for the pre-experimental study that was carried out in the selected old age homes. The research was carried out with one group using a pretest-posttest design. For information gathering, a structured knowledge questionnaire was utilized.
Results and Conclusions: The study concluded that the pretest mean was 15.2 and the posttest mean was 32.6, with a 17.4 mean difference, and the calculated t value was 12.5, which is higher than the table value 2.05 at 29 df with a 0.05 level of significance. This shows a significant difference ($p < 0.05$) in pretest and posttest knowledge scores. Results indicated that after the administration of the structured teaching program on key facts and primordial prevention, the knowledge scores among the elderly increased significantly.

Keywords: Elderly, Knowledge, Healthy Ageing, Instructional Programme

Introduction:
A pandemic denotes the rapid global spread of a newly identified infectious disease, presenting challenges in innate resistance among the population. The emergence of compromised immune systems facilitates the swift transmission of diseases, leading to unexpected and widespread impacts on individuals and communities worldwide.
Despite efforts to control the spread of infectious diseases, their multifaceted effects extend beyond physical health, influencing mental well-being, socioeconomic aspects, and global dynamics. The study recognizes the unique vulnerability of the elderly population, emphasizing the need for tailored strategies and educational interventions. The unprecedented challenges posed by such situations necessitate novel approaches to safeguard the elderly, addressing their susceptibility and promoting holistic well-being.
Elderly individuals face higher vulnerability due to physiological changes. Studies have shown increased mortality rates and mental health impacts, especially in the elderly, with heightened rates of depression and anxiety. Education on primordial prevention plays a crucial role in mitigating these risks.
Educating seniors about key facts and prevention measures is essential, aligning with Arthur Combs' humanistic theory, emphasizing behavior change through knowledge acquisition and personalization. The application of this theory facilitates behavior change and personalized knowledge, insights into the effectiveness of structured teaching programs in promoting awareness and preventive practices among the elderly population.

Aim:
The study aims to evaluate the effectiveness of a structured teaching program on the key facts of primordial

prevention among the elderly population, utilizing Arthur Combs' humanistic theory as the conceptual framework.

Objectives:
1. To assess the knowledge of the elderly population regarding the key facts of primordial prevention.
2. To implement a structured teaching program targeting the acquisition of knowledge on primordial prevention.
3. To evaluate the posttest knowledge scores compared to pretest knowledge scores among the elderly.
4. To explore the personalized knowledge and behavior change among the elderly following the intervention.

Materials and Methods:
The study was conducted in community centers, retirement homes, and healthcare facilities, focusing on individuals aged 60 and above. A quasi-experimental design was employed with pre-test and post-test assessments for an intervention group receiving a structured instructional program on primordial prevention and a control group without the program. Inclusion criteria included elderly individuals who could comprehend the program and were willing to participate, while those with severe cognitive impairments or medical conditions were excluded.
A purposive sample of 30 participants was selected using randomized sampling with stratification based on demographics. Data collection involved pre-test questionnaires to assess baseline knowledge, implementation of the instructional program, and post-test questionnaires to evaluate knowledge improvement. The structured questionnaire included demographic details and knowledge-based questions scored for correctness, with a maximum score of 44. Pre-test and post-test mean scores were 15.2 and 32.6, respectively, showing a significant improvement of 17.4 points (t-value = 12.5, $p < 0.05$). Statistical methods like t-tests and ANOVA were used for analysis.
The validity of the questionnaire and teaching program was established through expert review, leading to refinements for clarity. Reliability was confirmed using the split-half method ($r = 0.67$). Ethical approval was obtained, and informed consent ensured participant privacy and confidentiality. The findings demonstrated that the structured educational program effectively enhanced knowledge of essential health facts and primary prevention among the elderly population, affirming the study hypothesis (H1).

Plan of Statistical Analysis:
Descriptive statistics were calculated for baseline characteristics, including age, gender, education, religion, diet, health history, vaccination coverage, and health knowledge sources. Baseline differences between intervention and control groups were assessed using independent t-tests for continuous variables and chi-square tests for categorical variables.
For primary outcomes, paired t-tests compared pre- and post-intervention knowledge scores within each group, while independent t-tests assessed score changes between groups. Secondary outcomes analyzed the association between the instructional program and behavioral changes in primary prevention practices using chi-square tests or logistic regression.
Subgroup analyses explored variations in program efficacy across demographics like age and gender using interaction tests and stratified analyses. Results were interpreted in line with study objectives, addressing limitations or biases. Implications for public health interventions to improve elderly knowledge and preventive practices were discussed, with recommendations for future research.

Results:

Objective 1: Assess the Knowledge of the Elderly Population Regarding Key Facts

Demographic Variables	Frequency (N)	Percentage (%)
Age in years		
60-65	5	16.7
65-70	5	16.7
70-75	10	33.3
Above 75	10	33.3
Gender		
Male	14	46.7
Female	16	53.3
Education Level		
Primary	2	6.7
Secondary	18	60
Graduation	4	13.3

Others	6	20
Religion		
Hindu	13	43.3
Muslim	12	40
Christian	5	16.7
Others	0	0
Diet Type		
Vegetarian	6	20
Non-vegetarian	24	80
Previous Knowledge		
Yes	8	26.7
No	22	73.3
Source of Information		
Social Media	4	13.3
Peer Group	3	10
Health Professional	20	66.7
Mass Media	3	10

Objective 2: Implement a Structured Teaching Program

Knowledge Scores	Mean	Standard Deviation (SD)	Mean Percentage (%)
Pretest	15.2	5.2	-
Posttest	32.6	5.6	74

Objective 3: Evaluate Pretest and Posttest Knowledge Scores

Knowledge Scores	Mean	Mean Difference	t-Value	p-Value	Significance
Pretest	15.2				
Posttest	32.6	17.4	12.5	<0.0001	Highly Significant

Significant p<0.05, non-significant p>0.05

Objective 4: Explore Personalized Knowledge and Behavior Change

Background Variables	Level of Posttest Knowledge	Chi-Square (χ^2) Value	Table Value	Significance
Age in years				
60-65	Below Average: 0, Average: 3, Above Average: 2	0.4	7.82	Not Significant
65-70	Below Average: 0, Average: 2, Above Average: 3			
70-75	Below Average: 0, Average: 5, Above Average: 5			
Above 75	Below Average: 0, Average: 5, Above Average: 5			
Gender				
Male	Below Average: 0, Average: 4, Above Average: 10	4.82	5.99	Not Significant
Female	Below Average: 0, Average: 11, Above Average: 5			
Educational Level				
Primary	Below Average: 0, Average: 1, Above Average: 1	5.66	7.82	Not Significant
Secondary	Below Average: 0, Average: 12, Above Average: 6			
Graduation	Below Average: 0, Average: 1, Above Average: 3			
Others	Below Average: 0, Average: 1, Above Average: 5			
Religion				
Hindu	Below Average: 0, Average: 8, Above Average: 5	2.492	7.82	Not Significant

Muslim	Below Average: 0, Average: 6, Above Average: 6			
Christian	Below Average: 0, Average: 1, Above Average: 4			
Others	Below Average: 0, Average: 0, Above Average: 0			
Diet Type				
Vegetarian	Below Average: 0, Average: 3, Above Average: 3	0	3.84	Not Significant
Non-vegetarian	Below Average: 0, Average: 12, Above Average: 12			
Previous Knowledge				
Yes	Below Average: 0, Average: 6, Above Average: 2	2.72	3.84	Not Significant
No	Below Average: 0, Average: 9, Above Average: 13			
Source of Information				
Social Media	Below Average: 0, Average: 3, Above Average: 1	4.166	7.82	Not Significant
Peer Group	Below Average: 0, Average: 2, Above Average: 1			
Health Professional	Below Average: 0, Average: 10, Above Average: 10			
Mass Media	Below Average: 0, Average: 0, Above Average: 3			

Significant p<0.05, non-significant p>0.05

Demographic Characteristics:

Age Distribution:

The study reveals that the majority (33.3%) of the elderly population falls within the 70–75 year age group. This indicates a focus on a specific segment of the elderly population.

Gender Distribution:

Females represent 53.3% of the study population, highlighting the importance of considering gender differences in the analysis and interpretation of results.

Education Level:

60% of the elderly have a secondary education, suggesting a moderate educational background among the study participants.

Religious Affiliation:

43.3% of the participants identified as Hindu, providing insights into the religious diversity within the elderly population under study.

Dietary Habits:

A significant majority (80%) are non-vegetarians, which may have implications for understanding lifestyle choices and health-related behaviors.

COVID-19 Infection Rate:

56.7% of the elderly were infected with COVID-19, underscoring the vulnerability of this age group to the virus.

Vaccination Coverage:

Encouragingly, 100% of the participants were completely vaccinated against COVID-19, which is crucial information in the context of pandemic response and prevention.

Knowledge Sources:

A notable finding is that 73.3% of the elderly had no previous knowledge about COVID-19, and 66.7% obtained their knowledge from health personnel. This underscores the significance of healthcare professionals in disseminating information.

Pretest and Posttest Knowledge Scores:

Pretest Knowledge:

The mean pretest knowledge score of 15.2 (SD = 5.2) indicates a relatively low baseline understanding of key facts about COVID-19 and primordial prevention among the elderly.

Pretest Knowledge Distribution:
A substantial majority (86.7%) of the elderly had below-average knowledge in the pretest, emphasizing the need for educational interventions.
Posttest Knowledge:
The mean posttest knowledge score of 32.6 (SD = 5.6) reflects a significant improvement in knowledge after the structured educational program.
Statistical Significance:
The calculated t value of 12.5, exceeding the critical table value, indicates a highly significant difference in knowledge scores before and after the educational program.
Program Efficacy:
The positive outcomes support the hypothesis (H1) that the structured educational program effectively increased knowledge regarding COVID-19 and primordial prevention among the elderly.
Implications and Conclusion:
The findings suggest that tailored educational programs can successfully enhance knowledge levels among the elderly, contributing to better public health outcomes.
The study highlights the importance of targeted interventions, especially in populations with low baseline knowledge.
Complete vaccination coverage is a positive indicator of the effectiveness of vaccination campaigns among the elderly.
The research underscores the role of healthcare professionals in disseminating accurate information to the elderly population.

Conclusions:
The study highlights key demographic and health insights about the elderly population, focusing on individuals aged 70–75, which is crucial for designing age-specific health interventions. Females constituted 53.3% of the population, emphasizing the need for gender-specific health programs. With 60% of participants having a secondary education, interventions should cater to varying educational levels. The religious and dietary diversity observed underscores the importance of culturally sensitive health education programs. A COVID-19 infection rate of 56.7% highlights the vulnerability of this age group, stressing the need for targeted preventive measures. Encouragingly, 100% vaccination coverage among participants reflects the success of vaccination campaigns in controlling COVID-19 spread. However, a significant knowledge gap was evident, as 73.3% of participants had no prior knowledge about COVID-19, underscoring the need for health education to address misinformation and improve awareness. The structured educational program proved effective, with a substantial improvement in knowledge scores (mean increase of 17.4 points), demonstrating its potential to enhance awareness among the elderly population.

Discussion:
Demographic Profile:
Understanding the demographic profile of the elderly population, particularly those aged 70–75, is crucial for tailoring health interventions. This ensures that interventions address specific age-related health needs and concerns [14].

Gender Disparity:
The higher representation of females in the study population highlights the importance of considering gender-specific health needs and educational programs. Gender-sensitive approaches are essential for addressing health disparities and promoting equitable access to healthcare [15].

Educational Background:
The prevalence of secondary education among 60% of the elderly suggests the need for educational interventions that cater to varying levels of educational attainment within this population. Tailored educational programs can effectively address knowledge gaps and promote health literacy. Similar findings were reported by earlier work in the field of communicable disease in the Southern state of India. The structured teaching program effectively increased knowledge regarding Nipah virus infection among adults. Adherence to standard precautions (including hand hygiene, personal protective equipment, and isolation protocols) was crucial for preventing Nipah virus transmission [14-17].

Religious and Dietary Diversity:
Religious and dietary diversity among the elderly underscore the importance of culturally sensitive health education programs. Understanding cultural beliefs and practices is essential for delivering effective health messages and promoting behavior change [14, 18].

COVID-19 Vulnerability:
The high infection rate of 56.7% among the elderly highlights their vulnerability to COVID-19. Targeted preventive measures, including vaccination campaigns and health education initiatives, are essential for protecting this age group from the virus. A similar level of vulnerability was reported by earlier investigators [14, 15, 16].

Vaccination Success:
The 100% vaccination coverage among the elderly is a positive outcome, indicating the success of vaccination campaigns. This achievement is crucial for controlling the spread of COVID-19 and reducing the burden on healthcare systems.

Knowledge Gap:
The majority of the elderly had no previous knowledge about COVID-19, indicating a significant knowledge gap. Health education initiatives play a critical role in addressing misinformation and improving awareness among this population [19].

Knowledge Improvement:
The structured educational program resulted in a substantial improvement in knowledge scores, with a mean increase of 17.4 points. This highlights the effectiveness of targeted interventions in enhancing knowledge levels among the elderly [20-23]. The statistical analysis demonstrated a highly significant difference in knowledge scores before and after the educational program. This supports the conclusion that the program was effective in increasing knowledge about COVID-19 and primordial prevention among the elderly [20-23].

Role of Health Personnel:
The significant percentage of elderly individuals who gained knowledge from health personnel underscores the crucial role of healthcare professionals in health education and information dissemination. Trusted sources of information are essential for promoting behavior change and improving health outcomes [14, 16, 17, 20-22, 27-30].

Recommendations for Future Action:
Continue and expand structured educational programs tailored to the elderly population. Consider gender-specific and culturally sensitive approaches in health education initiatives. Encourage ongoing collaboration between healthcare professionals and the elderly community for effective information dissemination.
In summary, the research findings support the efficacy of structured educational programs in improving knowledge levels among the elderly regarding COVID-19 and primordial prevention. These conclusions have implications for public health strategies, highlighting the importance of targeted interventions and ongoing health education efforts.

Conflict of Interest
There is no conflict of interest for the principal investigator and other authors.

References
1. Burkle FM: Declining public health protections within autocratic regimes: impact on global public health security, infectious disease outbreaks, epidemics, and pandemics. Prehosp Disaster Med. 2020, 35(3): 237-46. 10.1017/S1049023X20000424
2. Ministry of Health and Family Welfare. Department of Health and Family Welfare: COVID-19 in India. (2021). Accessed: July 15, 2020: http://www.mohfw.gov.in/revised guidelines on covid 19
3. Alimohandi Y, Sepandi M, Taghdir M, et al.: Determine the most common clinical symptoms in COVID-19 patients: a systematic review and meta-analysis. JMPH. 2020, 61:304-12. 10.15167/2421-4248/jpmh2020.61.3.1530
4. Worldometers: COVID-19 Coronavirus Pandemic. (2020). Accessed: July 19, 2020: https://www.worldometers.info/coronavirus/
5. Dhama K, Patel SK, Kumar R, et al.: Geriatric population during the COVID-19 pandemic: problems, considerations, exigencies, and beyond. Front Public Health. 2020, 8:574198. 10.3389/fpubh.2020.574198

6. Mueller AL, McNamara MS, Sinclair DA: Why does COVID-19 disproportionately affect older people? Aging. 2020, 12(10):9959-81. 10.18632/aging.103344
7. University of Minnesota: Center for Infectious Disease Research and Policy. (2023). Accessed: July 22, 2020: http://www.cidrap.umn.edu
8. Fernandes M, Thakur JR, Gavanje MS: A study to assess knowledge regarding COVID-19 among nursing students. Asian J. Nursing Education and Research. 2021, 11(1):65-67. 10.5958/2349-2996.2021.00017.3 2020, 9:55-56. 10.36106/paripex.20209(8)
9. Singh AK, Agrawal B, Sharma A, et al.: COVID-19: assessment of knowledge and awareness in Indian society. J Public Aff. 2020, 20(4):e2354. 10.1002/pa.2354
10. Delves PJ: Effects of aging on the immune system. (2021). Accessed: August 20, 2020: https://www.merckmanuals.com/home/immune-disorders/biology-of-the-immune-system/effects-of-aging-on-the-immune-system
11. Murphy L, Markey K, O'Donnell C, et al.: The impact of the COVID-19 pandemic and its related restrictions on people with pre-existent mental health conditions: a scoping review. Arch. Psychiatr. Nurs. 2021, 19:375-94. 10.1016/j.apnu.2021.05.002
12. Haas EJ, Angulo FJ, McLaughlin JM, et al.: Impact and effectiveness of mRNA BNT162b2 vaccine against SARS-CoV-2 infections and COVID-19 cases, hospitalizations, and deaths following a nationwide vaccination campaign in Israel: an observational study using national surveillance data. The Lancet. 2021, 397(10287):1819-29. 10.1016/s0140-6736(21)00947-8. Humanistic learning theory. 10.1002/j.2161-1939
13. Goundar S: Chapter 3 - research methodology and research method. Cloud Computing. Goundar S (ed): Research Gate Publications; 2012. https://www.researchgate.net/publication/333015026_Chapter_3_-_Research_Methodology_and_Research_Method
14. Chittaluri V. Effectiveness of Structured Teaching Program on Knowledge and Attitude Regarding Nipah Virus Infection and Its Prevention. International Journal of Biomedical Investigation. 2021;4(2):1-6.
15. Nair AG, Clement N, Amala L, Athira R, Joy J, Koshy JA. Effectiveness of Structure Teaching Programme on prevention of selected Zoonotic Disease among High School Children in selected school, Bharanikavu Panchayath. International Journal of Advances in Nursing Management. 2022;10(2):117-20.
16. Rati SA, Pujari J, Indi S, Guggari G. Impact of Alertness Programme on Knowledge Regarding Nipah Virus Infection among Health Care Providers Residing at Vijayapur.
17. Pavithra H, Nirgude AS, Balakrishna AG, Bijali N, Revathi TM, Yatnatti SK. Are the medical interns ready to deal with the treatment, prevention and control of Nipah virus infection at the tertiary care hospital?. Journal of Family Medicine and Primary Care. 2019 Nov;8(11):3653.
18. Shereen, M. A., Khan, S., Kazmi, A., Bashir, N., & Siddique, R. (2020). COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *Journal of Advanced Research*, *24*, 91-98. https://doi.org/10.1016/j.jare.2020.03.005 available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7113610/
19. Roy D, Tripathy S, Kar SK, Sharma N, Verma SK, Kaushal V. The study of knowledge, attitude, anxiety and perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian J Psychiatry. 2020;51:102083.
20. Parikh PA, Shah BV, Phatak AG, Vadnerkar AC, Uttekar S, Thacker N et al. COVID-19 Pandemic: Knowledge and Perceptions of the Public and Healthcare Professionals. Cureus. 2020;12(5):e8144.
21. Salman M, Mustafa ZU, Asif N, Zaidi HA, Hussain K, Shehzadi N et al. Knowledge, attitude and preventive practices related to COVID-19: a crosssectional study in two Pakistani university populations. Drugs Ther Perspect. 2020;1-7.
22. Singh DR, Sunuwar DR, Karki K, Ghimire S, Shrestha N. Knowledge and Perception Towards Universal Safety Precautions During Early Phase of the COVID-19 Outbreak in Nepal. J Community Health. 2020;1-7.
23. Blendon RJ, Benson JM, DesRoches CM, Raleigh E, Taylor-Clark K: The public's response to severe acute respiratory syndrome in Toronto and the United States. Clin Infect Dis. 2004, 38:925-931. 10.1086/382355
24. Lau JTF, Yang X, Tsui H, Kim JH: Monitoring community responses to the SARS epidemic in Hong Kong from day 10 to day 62. J Epidemiol Commun Health. 2003, 57:864-870. 10.1136/jech.57.11.864
25. Zhong NS, Wong GW: Epidemiology of severe acute respiratory syndrome (SARS): adults and children . Paediatric Resp Rev. 2004, 5:270-274. 10.1016/j.prrv.2004.07.011
26. Greenberg N, Docherty M, Gnanapragasam S, Wessely S: Managing mental health challenges faced by healthcare workers during covid-19 pandemic. BMJ. 2020, 368:m1211. 10.1136/bmj.m1211
27. Modi PD, Nair G, Uppe A, Modi J, Tuppekar B, Gharpure AS, Langade D: COVID-19 awareness among healthcare students and professionals in Mumbai metropolitan region: a questionnaire-based survey. Cureus. 2020, 12:e7514. 10.7759/cureus.7514

28. Bhilwara's Tale of Negligence: Infected Docs, Latest COVID-19 Case Hint at Possible Community Spread News18. (2020). Accessed: April 10, 2020: https://www.news18.com/news/india/bhilwaras-tale-ofnegligence-infected-doctors-latest-covid-19-case-hint-at-possibil.
29. Zhou F, Yu T, Du R, et al.: Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. Lancet. 2020, 395:1054-1062. 10.1016/S0140-6736(20)30566-3
30. Coronavirus in India: On every call you make, you will hear a person coughing and that is annoying - IndiaToday. (2020). Accessed: April 10, 2020: https://www.indiatoday.in/technology/talkingpoints/story/coronavirus-in-india-on-every-call-you-make-you-will-hear.