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Annals of Geriatric Education and Medical Sciences

Journal homepage: https://www.agems.in/

Original Research Article

Effectiveness of multimodal intervention on perception of geriatric clients regarding health promotional outcomes at a selected hospital, Kolar, Karnataka, India

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ARTICLE INFO

Article history:
Received 08-11-2023
Accepted 16-12-2023
Available online 19-02-2024

Keywords:
Geriatric
Multimodal Intervention
Health Promotion
Kolar

ABSTRACT

Purpose: To understand the Perception of geriatric clients, that influence through Multimodal Intervention.
Materials and Methods: Quantitative approach Quasi-Experimental interventional controlled study with pre-test post-test design and follow-up for two months, adopted by using purposive sampling technique among 120 geriatric clients who gave consent for participation in the study at two different settings of hospitals from July 2022 to January 2023, Kolar. After obtaining CEC, data was obtained using the validated perception questionnaire and the Multimodal Intervention package consisting of a Snake & Ladder Health promotion strategies game, Educational Video, and Informational pamphlet been distributed to the experimental group whereas routine care given to the Control group followed by Posttest on the 30^{th} day & 60^{th} day. Reinforcement was carried out by the investigator on fortnightly basis reminders through messages. Data were analyzed by using Descriptive & Inferential statistics such as RMANOVA, Independent 't'-test, Paired 't'-test, and Chi-square.
Results: A significant effect was demonstrated in the experimental group with enhanced mean, SD from pretest to posttest I and Posteest II found to be 35. ±7.9, 46.3 ±6.1 and 48.3 ±4.7 without any significant changes in the control group.
Conclusion: Geriatric population was the biggest beneficiary, Multimodal Intervention was proven to be effective and can be implemented in hospitals, and community settings in improving the perception of geriatric clients to foster healthy aging.
Sduaher Project Reg NO : SDUAHER/KLR/Dept.R&I/89/2020-2021 (13/03/2021)
CTRI Trial Reg no: CTRI/2021/07/034632 (16/07/2021)

1. Introduction

Aging is a natural phenomenon with *opportunities and challenges*. Aging cannot be prevented, but we can learn how to deal with arising conditions to achieve greater health among geriatric to lead a healthy life by understanding their needs and concerns, which is inevitably the ideal way to enhance a higher *perception towards quality of life.*[1]

As per the key facts of aging per WHO 2022, between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%[2] Health promotion is avital component among the elderly.[2] In such a situation, health issues can be effectively addressed by adopting a holistic approach to Health promotion by empowering individuals and communities to implement actions to enhance healthy aging, promoting strategies, and

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https://doi.org/10.18231/j.agems.2023.009

creating an age-friendly environment.[3]

Although studies highlighted older adults' health problems and physical, cognitive, and selected aspects of interventions, a gap existed to focus on holistic health promotion interventions.

The current study explored novel interventions to promote healthy aging, through a positive perception through multimodal Intervention Strategies to address the health promotion measures that require awareness and motivation, focusing on holistic health promotion and educational videos, Snake and Ladder health promotion games, and an Informational pamphlet that briefs the holistic measures to promote positive health outcomes which is essential in national and global settings[4]

Health promotion needs to be built as a national policy to reduce hospital readmissions and exclusive geriatric consultations and Inpatient wards to be implemented to reduce waiting time self-management health promotion measures to be utilized efficiently to lead to positive health outcomes.[5]

2. Materials and Methods

2.1. Study design

Quantitative approach-Quasi Experimental interventional study with pretest post-test design and follow-up study.

To explore the perception of Multimodal Intervention. Trials registration on ClinicalTrials.gov: CTRI/2021/07/034632

2.2. Volunteer recruitment

Volunteer inclusion criteria were adults aged≥60years, seeking medical services at IPD, able to speak and understand Kannada or English and accessible for the follow up throughout the study period by providing written consent. Key components of Multimodal Intervention included Physical activity, Nutrition, fall prevention, Socialization, Medication regime, Spiritual aspects, Health Schemes. Participant recruitment of older adult's aged≥60 years who are seeking medical services at R.LJ.Hospital and Research Centre, Tamaka, Kolar. (n=60) in Experimental group and District Government SNR Hospital for Control group (n=60), were recruited by using Purposive sampling technique between June 2022 and December 2022. Pretest in September, Posttest I October & Posttest II in November 2022. The experimental group given Multimodal Intervention whereas Control group receives Routine care. Participants who had Physical & Mental disability-which doesn't allow them to participate in Multi-Modal Intervention, & terminally ill were excluded from the study.

A researcher visited the hospitals and introduce the study. Participant information sheets and written consent forms were given to older adults which was translated in the regional language who were interested in the study. Upon returning the consent forms, participants were invited to attend the study for a period of two months. A sample size of 120 participants was chosen in line with previous sample size recommendations for feasibility studies[6]

2.3. Intervention

The Multimodal intervention consisted of Educational Video teaching, Snake ladder game and Informational pamphlet was given after the Pretest consisting of perception questionnaire 15 items, for a period of 30 Minutes, the educational video teaching was prepared by researcher in the regional language and Snake Ladder Health promotion game was developed as learning through playing and Informational pamphlet consisting of holistic health promotion strategies, participants were reinforced & followed up, through weekly mobile reminders (SMS)for a period of 2 months. Returned to in-person visits, in which the intervention continued face-to-face.

2.4. Data collection

Participants' age, gender, marital status, Educational qualification, Type of family, Co-morbidities, Health checkups undergone, and Bio physiological parameters were assessed such as Nutritional status, Vision, hearing acuity, Sleep pattern, Bowel & Bladder pattern, Physical activity per day, were recorded to provide participants' baseline characteristics (Table 1). Data collection was conducted by a researcher for 2 months.

The pre-test was administered on the first day with the contact details of participants/caretakers.

The perception tool consists of three domain areas focusing on perception of aging & health, Physical, Psychological Health, Social relationships, Financial & Spiritual, was intervened to state their responses according to their personal opinions; for those who needed clarification, an explanation was given[7] For each question, their response was obtained. Later, the participants of Experimental group was given a Multimodal Intervention whereas Control group received the routine care of the hospital. All the geriatric clients was given the contact details of investigator and informed about the weekly mobile reminders/telephonic conversation given to participants and to attend the posttest I on the 30^{th} and posttest II on 60^{th} day. Feedback/Opinnionaire of participants was collected and found to be Excellent Intervention.

2.5. Primary outcome measures

The feasibility of implementing the intervention was determined by:

1. The number of volunteer's recruited, undergone intervention, and retained.
2. The number of older adults recruited. [8]

3. Secondary Outcomes

Quality of Life levels assessed by WHOQOL questionnaire. Geriatric clients had been biggest beneficiary, the Intervention serves as protocol & QOL empowering strategy to implement at hospitals & communities to promote healthy aging. [9]

All outcome measures were recorded at baseline and repeated at 1 and 2 months and No adverse events were reported.

Analysis baseline characteristics of participants were reported as mean or median, SD, frequency and percentage.

Table 1: Methods and type of statistics used for study

Methods	Type of Statistics	Purposes
Descriptive Statistics	Frequency, Percentage, Mean, SD	Participants socio demographic characteristics
Inferential Statistics	Paired 't'test	Compare the outcome variables before and after intervention within the group
	Independent 't' test	Compare the outcome variables before and after Intervention between the groups
	RM ANOVA	Assess differences in outcome over time.
	Chi square	Find association selected socio demographic variables with outcome variables

Table 1 represents the statistical Descriptive and Inferential tests used for the study. Frequency, Percentage, Mean, SD were used to assess the Participant's socio-demographic characteristics. Inferential Statistics like Paired 't'test used to compare the outcome variables before and after the intervention within the group. Independent't' test was used to analyse the outcome variables before and after Intervention between the groups and RM ANOVA was used to assess differences in outcome over time. Chi square used to find an association between selected socio-demographic variables with outcome variables.

3.1. Sample size

Derived by employing the Med. Calc statistical software assessed the difference between two means as 14.2 and the SD or variance of 22.7 with the effect size of 0.2, with a 80% power of the study and a predetermined significance level of 95% (CI) with a two- tailed test and 5% absolute precision alpha error (d) and assuming 10% to be an attrition rate the estimated sample size was around 52 in each group. If 10% of the sample's dropouts are taken into account, the estimated sample size was around 60 in each group.

3.2. Ethics

This study received ethical approval from the Sri Devaraj Urs Academy of Higher education and research, Tamaka, Kolar. The steering committee had oversight of study processes. Data was anonymised and stored on a password protected University database to maintain confidentiality.

4. Results

4.1. Feasibility of the participant intervention

Sixty volunteers were recruited & retained at the end of the study in Experimental Group. And 2 participants withdrawn due to lack of time, work commitments in control group.

4.2. Distribution of Pre-test and Post-test level of QOL

Experimental group, Table shows the grading of perception scores of the geriatric clients regarding Health promotional outcomes in the pre-test majority of the geriatrics in the experiment group (70%) had moderate level of perception, 30 % had poor perception, and none had good level of perception regarding health promotional outcomes. At the time of post-test assessment 1 on 30^{th} day after the Multimodal intervention given by the investigator, majority (76.7%) had moderate level of perception, 23.3% had good level of perception, and none had poor level of perception. On 60^{th} day posttest 2, majority 56.7% had moderate perception and 43.3% had good perception regarding health promotional outcomes and none had poor perception.

Whereas in control group in the pre-test majority of the geriatrics (61.6%) had moderate level of perception, 33.4 % had poor perception, while, 5% had good level of perception regarding health promotional outcomes. At the time of post-test assessment 1 on 30^{th} day without Multimodal intervention given, majority (70%) had moderate level of perception, 30% had poor perception and none had good level of perception. On 60^{th} day posttest 2, majority 65% had moderate perception and 35% had poor perception regarding health promotional outcomes and none had good perception. [10]

Testing of Hypotheses H_1: Hence the H1 is accepted and the alternate hypothesis is rejected.

Table 2 & Figure 1 shows that in the experimental group the pre-test perception score (mean ± SD 35.7±7.9) was significantly less (p=0.001) than the perception scores of both post-tests (mean ± SD post-test 1=46.3±6.1, post-test 2=48.3±4.7). Partial Eta squared value (ηp2 =.6816) indicates large effect size with Wilks lambda value of.319 significant at .000, which suggests that Multimodal Intervention is very effective in increasing the perception regarding Health promotional outcomes among the geriatric

Table 2: Pre-test and Post-test level of perception and qualityof life among geriatric clients regarding health promotional outcomes.

Sl.no	Level of Perception	Experimental group Mean±SD	Control group	MD	Independent 't' Value	p-Value & Inference
1.	Pretest	35.6±10.3	34.6±11.5	1	.74	.45 NS
2.	Posttest I	46.3 ±9.7	34.10±10.8	12.2	9.44	.000* SS
3.	Posttest II	48.3 ± 9.0	34.9± 11.0	13.4	10.30	.000*SS

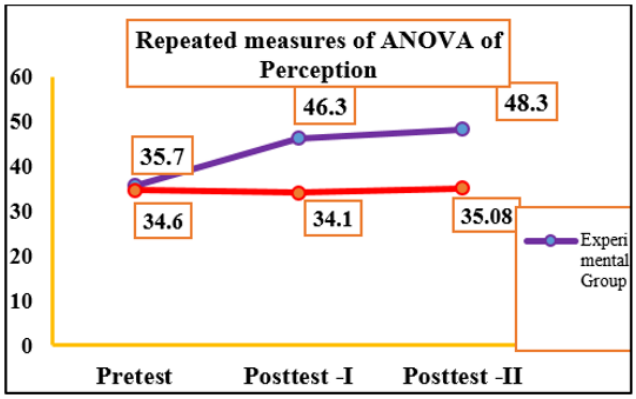

Figure 1: Repeated measures of anova of perception

clients.[11]

5. Discussion

It was feasible and safe to deliver a Multimodal Intervention among geriatric clients at health care and community settings. The intervention was acceptable to Geriatric clients, Care takers and it can be developed as a protocol to improve health promotion outcome measures among elderly.[12] A key to success was the video teaching and Snake ladder game supports to upskill older adults' perception and improve QOL and confidence to engage with the intervention. This study adds to a burgeoning evidence-base suggesting that with proper training, volunteers can take more direct roles in supporting older adults and can successfully deliver an MMI Intervention. A systematic review of 18 studies found evidence suggesting that Health promotion interventions are essential to improve Quality of Life and improve health outcomes of community-dwelling older adults including functional status, frailty status and reduction in fear of falls.[13] This study adds to existing research through exploring how best to recruit and all sensory abilities used Multimodal Educational Intervention, and retain participants. At the initial day of recruitment, the participants were given Pretest, followed by Multimodal Intervention focusing on educational video teaching, Snake & Ladder game, Informational pamphlet was shared with posttest I at 30^{th} day, Posttest II at 60^{th} day which showed a greater significant improvement in perception among geriatric clients on domain areas. And the Intervention Videos and pamphlets provided to geriatric clients.[14]

Similarly, a range of studies emphasized on physical, Cognitive, nutritional aspects whereas in this study holistic comprehensive health promotion measures required during elderly has been focused.[15]

Future research should explore the feasibility of Multimodal interventions within a wider diversity of older adults, including a stronger representation of multiple ethnic groups, and within different community settings, such as old

age homes.

6. Limitations

The study was conducted among older adults between 60-75 years age group. It can be conducted at community settings another limitation of the study doesn't include randomization since the vulnerable geriatric clients all should benefit of Intervention.[16] Further research is needed to better understand factors that influence participants' adherence to intervention and strategies to improve the Quality of Life.

7. Declaration

7.1. Ethical approval and consent to participate

To carry out the study, Received Ethical approval from "Central Ethics Committee of Sri Devaraj Urs Academy of Higher Education and Research center, Tamaka, Kolar".

Before recruitment of participants, participant information sheet and written informed consent obtained in the translated regional language.

7.2. Consent to publication

Department of the Research and Development cell of SDUAHER has approved the permission to publish in the journal.

8. Conclusions

This study demonstrated that it was feasible and safe to deliver a Multimodal Intervention for community-dwelling older adults both in hospital and community settings. As geriatric group found to be biggest beneficiary with MMI Intervention package needs more emphasis on geriatric research projects. And researcher felt the need to incorporate geriatric wards in all specialty hospitals exclusively for Geriatrics. As India is developing country, government needs to focus on health schemes and pension schemes especially for elderly.

9. Source of Funding

None.

10. Conflict of Interest

None.

11. Acknowledgements

The authors would like to thank the Authorities of the study setting for their permission with the study and the Geriatric clients for their consent and co-operation in the conduct of the study.

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Cite this article: Vani R, Zeanath C. J, Aranha PR. Effectiveness of multimodal intervention on perception of geriatric clients regarding health promotional outcomes at a selected hospital, Kolar, Karnataka, India. *Ann Geriatrics Educ Med Sci* 2023;10(2):34-39.