



A PILOT STUDY ON EFFECTIVENESS OF M-HEALTH NURSE INITIATIVE ON KNOWLEDGE, LIFESTYLE AND WELLBEING REGARDING HEALTH PROMOTION AMONG YOUNG ADULTS – A MIXED METHOD APPROACH.

**Alice Dinah
Margaret D***

PhD Scholar, Associate Professor, Omayal Achi College of Nursing Affiliated to The Tamil Nadu Dr MGR Medical University, Chennai, Tamil Nadu. *Corresponding Author

Dr. Kanchana S

PhD Research Guide, Principal & Research Director-International Centre for Collaborative Research, Omayal Achi College of Nursing, Chennai, Tamil Nadu.

Dr. Celina D

Vice Principal, IEC Coordinator, Omayal Achi College of Nursing, Chennai.

**Dr. Ruthrani
Princely J**

PhD Research Coguide, Professor, HOD of Paediatric Department, Omayal Achi College of Nursing, Chennai, Tamil Nadu.

ABSTRACT

Introduction: Young adults unhealthy practices pave the way for acquiring Non-communicable Diseases (NCDs) in their later adulthood. Technology has been widely used to empower individuals targeting unhealthy behaviors

Objective: To evaluate the feasibility of the m-health nurse initiative on knowledge, lifestyle, and wellbeing regarding health promotion

Methods: Mixed methods research approach – exploratory sequential research design was used. Young adults were screened for health risks. QUALITATIVE using intensity sampling, and phenomenological method Qualitative inputs were framed and the m-health nurse initiative package was developed. Using purposive sampling, 40 samples fulfilling inclusion and exclusion criteria were selected as 20 for quantitative data collection for both groups. Data was collected using a structured knowledge questionnaire, and Health Promoting Lifestyle Profile-II and Warwick-Edinburgh Mental Well-Being rating scale respectively. **Results:** Statistical analysis of the background variables revealed homogeneity between the groups. The results showed an improvement in the mean score of knowledge, lifestyle, and well-being in the study group by 5.55 (12.55-18.10), 30.35 (120.25-150.60), 11.85 (40.75-52.60), when compared with the control group 5 (12.10-12.70), 1.7 (119.80-121.50), 0.45 (41.85-42.30) respectively. Inferential analysis showed very high statistical significance in the study group. A fair positive correlation was identified between the variables, indicating that technology-enabled health information had a significant impact on the other variables. **Conclusions:** m-Health Nurse Initiative has been found to have significant impact in promoting health. The scaled-down version can serve as a portal access to all citizens.

KEYWORDS : health promotion, mobile health nursing intervention, knowledge, lifestyle, wellbeing, young adults at health risks.

INTRODUCTION

Young adults' vitality is determined by their healthy living. Young adults aged 18-24 years are in the period of transitioning towards matured adults [1]. Across globe, around 1.2 billion young people aged 15-24 years, accounts for 16 % of global population who are essential in the societal development [2]. Their unhealthy practices pave the way for acquiring Non-communicable Diseases (NCDs) in their later adulthood [3]. Young adults are engaged in multiple risks behaviours such as use of tobacco, alcohol, substances, premarital sexual intercourse which paves the way for mental illness among Indian young adults [4,5]. World Health Organizations (WHO) global statistics reports of over 1.5 million adolescents and young adults aged 10–24 years died in 2021, about 4500 every day [6]. Unintentional injuries are the leading cause and physical inactivity has increased the chances of death up to 20 to 30 % [7]. The objective of the study is to evaluate the feasibility of the m-health nurse initiative on knowledge, lifestyle, and wellbeing regarding health promotion.

METHODS

A Mixed Methods Research approach was used to explore the health-related initiatives among young adults, attending colleges in Tiruvallur district, Tamil Nadu, India. Sequential Exploratory Mixed Methods Research Design is used in this study. Phenomenological approach to explore the lived experiences of their lifestyle practices followed by Quasi Experimental Research Design for quantitative phase. Young adults both male and female aged 18-24 years with the health risks in the selected settings were the accessible population. Qualitative Intensity sampling and quantitative Nonprobability purposive sampling technique was used to select 40 samples fulfilling inclusion and exclusion criteria, 20 for each group.

Data collection and analysis

Young adults were screened for health risks. Two samples were selected using intensity sampling for exploring the young adult's health risks and using grand tour questions. "Colaizzi's method, themes were derived. Data was collected using a self-administered structured knowledge questionnaire, its reliability was 0.82 using test-retest method and Health Promoting Lifestyle Profile-II and Warwick-Edinburgh Mental Well-Being rating scale its Cronbach's Alpha (α)

coefficient was 0.92 and 0.89 respectively. The background variables, pretest level of knowledge, lifestyle and wellbeing are assessed. Implementation of m-Health Nurse Initiative consisting of mobile technology based behavioural change communication, pedometer and positive affirmation, was done for a group of 8-10 for 5 sessions which is spread over a period of 5 days by the researcher. The researcher conducts the posttest for the pilot study to assess the level of knowledge in 14 days and the level of lifestyle and wellbeing by the first month. Waitlist intervention was given to young adults in the control group. Data were entered in Microsoft Excel 2021 and exported to Statistical Package for Social Science Software (SPSS) Windows Inc. Version for analysis. Categorical and continuous variables were expressed as number (percentage) and mean \pm SD respectively. The independent variables considered were m-health nurse initiative and the dependent variables were knowledge, lifestyle and wellbeing. Analysis was carried to find the relationship of background variables. The correlation between independent and dependent variables were calculated using Pearson correlation coefficient. The Chi-square test was used to determine the relationship between variables.

Ethical considerations

Ethical clearance obtained from International Centre for Collaborative Research (ICCR) official Ethics Review Board of Omayal Achi College of Nursing, Chennai. Formal written permission from the Principal of Omayal Achi College of Nursing, and from the Head of the institution, the pilot study was executed. Informed written consent from young adults was obtained.

The investigator assured the clients about the anonymity and confidentiality. Participants are informed that the data collected which is used only for research purpose. Right to change their mind and withdraw from research. The Beneficiaries are given full freedom to disclose their view in case they feel discomfort during the course of the study.

RESULTS AND DISCUSSIONS

The main focus of the pilot study was to standardize the procedure for conducting interviews by maintaining privacy and confidentiality, and especially testing the feasibility of the tool.

Table 1 Demographic characteristic of participants N=40

Demographic Variables		Study (n=20)		Control (n=20)	
		n	%	n	%
Age in years	18-19	6	30	6	30
	20-21	8	40	8	40
	22-23	6	30	6	30
Gender	Male	9	45	8	40
	Female	11	55	12	60
Year of the Degree Programme	1 st	4	20	4	20
	2 nd	8	40	7	35
	3 rd	8	40	9	45
Religion	Hindu	17	85	13	65
	Christian	2	10	7	35
	Muslim	1	5	0	0
Type of Family	Nuclear family	17	85	16	80
	Joint family	3	15	4	20
Family monthly income (in Rs)	≤ 6174	0	0	1	5
	6,175-18,496	6	30	9	45
	18,497-30,830	6	30	5	25
	30,831-46,128	5	25	4	20
	46,129-61,662	3	15	1	5
Family history of noncommunicable disease	Yes	6	30	9	45
	No	14	70	11	55

Table 1 shows the demographic information of participants. Out of the 20 young adults in the study and control groups, equal percent of 40% were aged between 20-21 in both the groups, females were in majority because they constituted 55% and 60% respectively. The study was conducted among grade 1st-3rd year UG young adults, however, the equal percent of 40% were studying 2nd & 3rd in the study group, whereas in the control group 45% had the highest number studying 3rd year of the degree programme. Majority of 85% and 65% belong to Hindu religion, 85% and 80% were in nuclear family in both the groups. With relevance to family monthly income, equal percent of 30% had an income of Rs. 6,175-18,496 and Rs. 18,487-30,830 in the study group, whereas as in the control group, 45% had an income of Rs. 6,175-18,496. Both groups were homogenous with respect to the above-mentioned variables, as statistically depicted using chi square test.

Table 2 Lifestyle related health risks of young adults N=40

Lifestyle Risks		Study (n=20)		Control (n=20)	
		n	%	n	%
Eats at least 2 – 3 servings of vegetables	Yes	14	70	12	60
	No	6	30	8	40
Takes at least 1½ – 2 servings of fruits	Yes	8	40	9	45
	No	12	60	11	55
Had sweets/ fatty foods/ sugared drink	Yes	8	40	16	80
	No	12	60	4	20
Drinks at least 8-10 glasses of water	Yes	16	80	14	70
	No	4	20	6	30
Performs 30 mins of exercise daily	Yes	6	30	8	40
	No	14	70	12	60
Remains sitting/standing for > 6 hours	Yes	11	55	14	70
	No	9	45	6	30
Sleeps at least 7-9 hours	Yes	13	65	14	70
	No	7	35	6	30
Uses tobacco products	Yes	0	0	0	0
	No	20	100	20	100
Consumes any alcoholic drinks	Yes	0	0	1	5
	No	20	100	19	95
Experiences family problems	Yes	2	10	5	25
	No	18	90	15	75
Difficulty in academic related activity	Yes	7	35	9	45
	No	13	65	11	55

Table 2 illustrates the study findings on lifestyle related health risks in both the groups, most of them didn't eat 2-3 servings of vegetables, and had lesser consumption of fruits. Control group had higher percent consumption of sweets, fatty foods or sugared drink. In both group majority had the habit of drinking about 8-10 glasses of water daily and most of them didn't perform exercise for at least 30 minutes a day. Most of them were sedentary by either sitting or standing continuously for ≥ 6 hours daily. Majority were not having the habit of using tobacco and

consuming alcoholic drinks. Few of them were encountering family problems. Most of the them in both the groups, experienced inability to concentrate or focus on their academic or other related activities. The findings of the study were supported by the study done by Watson KB et al. found that among young adults. The most prevalent lifestyle risk was obesity (25.5%), depression (21.3%), and high blood pressure (10.7%).

Table 3 Level of health risks of young adults N= 40

Level of Health Risks	Total	Study (n=20)		Control (n=20)		Chi square test
		n	%	n	%	
Low	4	2	10	2	10	$\chi^2 = 1.33$ p= 0.51 NS df = 2
Moderate	27	15	75	12	60	
High	9	3	15	6	30	
Total	40	20	100	20	100	

NS-Not Significant p >0.05, * significant at p≤0.05, ** highly significant at p≤0.01, *** very highly significant at p≤0.001

Table 3 reveals the health risks among 40 young adults. Majority of 75% and 60% in both the groups, had moderate health risks, 15% and 30% had higher health risks, and equal number of 10% had lower health risks.

The exploration of the health risks revealed that the common lifestyle risks expressed were staying asleep, overeating, peer influence to enhance in risk taking behavior, couldn't resolve conflict and lack of healthy diet.

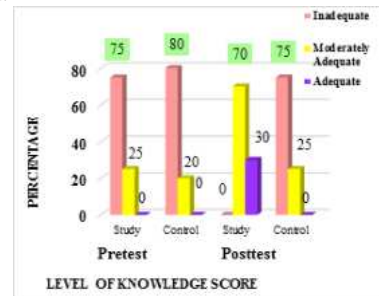


Figure 1 Pre and posttest level of knowledge of young adults N= 40

As shown in **figure 1**, In pretest majority of the young adults had inadequate knowledge in both the groups, indicating the need for behavior change communication whereas in posttest, 70% young adults had moderately adequate knowledge, in the study group, whereas, in the control no marked change was inferred.



Figure 2 Pre and posttest level of lifestyle score of young adults N= 40

The study assessed if young adults followed health promoting lifestyle behavior. The results in **figure 2** shows that, in both the groups moderate health promoting lifestyle practices were reported in the pretest. Post intervention revealed that, 80% had good health promoting practices in the study group. The findings of the study were supported by the study done by Walsh JC, Corbett T, Hogan M, Duggan J, McNamara A, evaluated the efficacy of mobile phone app intervention, to increase daily step counts among 55 young adults. The intervention group achieved a significant increase of over 2300 steps per day (an increase of approximately 45% in activity levels). A between-group t-test of the differences in step counts revealed that participants in the intervention condition had a significantly higher increase in step count (2393) than those in the control condition (1101; $t_{33}=2.07, P=.043$).

Table 4 Comparison of pre and posttest knowledge, lifestyle and wellbeing score in the study and control group. N=40

Variables	Study		Control		Mean difference	Student independent t test
	Mean	SD	Mean	SD		
Knowledge						
Pretest	12.55	3.35	12.10	2.53	0.45	t=0.48 p=0.63 (NS)
Posttest	18.10	2.92	12.70	2.08	5.40	t=6.74 p=0.001***(S)
Within groups	t=12.50 p=0.001***(S)		t=1.79 p=0.09 (NS)		Student Paired t test	
Lifestyle						
Pretest	120.25	10.77	119.80	13.47	0.45	t=0.12 p=0.91 (NS)
Posttest	150.60	8.22	121.50	13.24	5.40	t=8.35 p=0.001***(S)
Within groups	t=11.70 p=0.001***(S)		t=0.58 p=0.57(NS)		Student Paired t test	
Wellbeing						
Pretest	40.75	6.13	41.85	9.17	1.10	t=0.44 p=0.66 (NS)
Posttest	52.60	7.10	42.30	7.90	10.30	t=4.33 p=0.001***(S)
Within groups	t=7.33 p=0.001***(S)		t=0.24 p=0.82(NS)		Student Paired t test	

Highly significant at P≤0.01 * very highly significant at P≤0.001

Table 4 illustrates the comparison of knowledge, lifestyle and wellbeing score between the study and control group. The results showed an improvement in the mean score of knowledge, lifestyle, and well-being in the study group by 5.55 (12.55-18.10), 30.35 (120.25-150.60), 11.85 (40.75-52.60), when compared with the control group 5 (12.10-12.70), 1.7 (119.80-121.50), 0.45 (41.85-42.30) respectively. The calculated t test revealed that there was very high statistically significant difference was observed in the posttest between the study and control group and within the study group at p<0. 0001. The findings of the study were supported by the study done by Peuters, C, et al, conducted a Mixed-Methods Study Using a Quasi- Randomized Controlled Trial Design to evaluate the effectiveness of mobile health intervention for promoting mental health and health behaviours. Beneficial intervention effects were found for physical activity ($\chi^2_1 = 4.36, P = .04$), sedentary behaviour ($\chi^2_1 = 6.44, P = .01$), sleep quality ($\chi^2_1 = 6.11, P = .01$), and mood ($\chi^2_1 = 2.30, P = .02$).

Table 5 Correlation between knowledge and wellbeing gain score in the study group.

Domains	Mean difference and SD	Karl Pearson Correlation coefficient	Type of correlation
Knowledge Vs wellbeing	5.55±1.99 11.85±7.23	r= 0.32	Fair positive

Table 5 depicts that, there is a significant positive fair correlation between knowledge and wellbeing gain score, indicating that technology-enabled health information had a significant impact on the other variables.

Limitations

The time constraints and small sample size were the limitations of the present study.

Statistician Opinion and Suggestion

Statistician appreciated the study and suggested that the techniques

CONCLUSION

The current study offers some insights about the health risk behaviours and shows the necessity of future research in this area in order to develop appropriate health promotion interventions and it can be used for comparison to other places. The inputs of the pilot study have revealed that the tool was reliable, practicable, and feasible for collecting relevant data.

Recommendation

A collaborative effort between community stakeholders, civil structures and the government departments should engage in

addressing the problem of health-risk behaviours among young adults. Health hub and resilience building mentors should be established at colleges and young adults should be actively involved in physical training activities.

REFERENCES:

- [1] Y K. Teipel, (2021). The State Adolescent Health Resource Center, Konopka Institute, University of Minnesota. Retrieved from https://sahrc.umn.edu/sites/sahrc.umn.edu/files/2021-01/late_adol_stage-eng.pdf
- [2] United Nations, Peace, dignity and equality on healthy planet. Retrieved from <https://www.un.org/en/global-issues/youth>
- [3] Noncommunicable diseases, Newsroom-World Health Organization Retrieved from <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases#:~:text=Tobacco%20use%2C%20physical%20inactivity%2C%20the,of%20the%20response%20to%20NCDs.>
- [4] Malhotra, S., Kant, S., Ahamed, F., Rath, R., Kalaivani, M., Gupta, S. K., Ramadass, S., Pathak, V. K., Jaiswal, A., Parthasarath, R., Acharya, B. P., & Dwarakanathan, V. (2019). Health behaviors, outcomes and their relationships among young men aged 18-24 years in a rural area of north India: A cross-sectional study. *PLoS one*, 14(7), e0220285. Retrieved from <https://doi.org/10.1371/journal.pone.0220285>
- [5] Gururaj, G., Varghese, M., Benegal, V. N. R. K. P., Rao, G. N., Pathak, K., Singh, L. K., & Misra, R. (2016). National Mental Health Survey of India, 2015-16: *National Institute of Mental Health and Neurosciences*, 1-48. Retrieved from https://www.researchgate.net/publication/325128785_National_Mental_Health_Survey_of_India_2015-16_Prevalence_Pattern_and_Outcomes
- [6] Adolescent and young adult health, Newsroom-World Health Organization, 28 April, 2023. Retrieved from [https://www.who.int/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions#:~:text=Injuries%20\(including%20road%20traffic%20injuries,cases%20are%20undetected%20and%20untreated.](https://www.who.int/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions#:~:text=Injuries%20(including%20road%20traffic%20injuries,cases%20are%20undetected%20and%20untreated.)
- [7] Physical Activity, Newsroom-World Health Organization, 5th October 2022, Retrieved from <https://www.who.int/news-room/fact-sheets/detail/physical-activity>
- [8] Watson, K. B., Carlson, S. A., Loustalot, F., Town, M., Eke, P. I., Thomas, C. W., & Greenlund, K. J. (2022). Chronic Conditions Among Adults Aged 18–34 Years - United States, 2019. *MMWR. Morbidity and mortality weekly report*, 71(30), 964–970. <https://doi.org/10.15585/mmwr.mm7130a3>
- [9] Walsh, J. C., Corbett, T., Hogan, M., Duggan, J., & McNamara, A. (2016). An mHealth Intervention Using a Smartphone App to Increase Walking Behavior in Young Adults: A Pilot Study. *JMIR mHealth and uHealth*, 4(3), e109. <https://doi.org/10.2196/mhealth.5227>
- [10] Peuters, C., Maenhout, L., Cardon, G., De Paepe, A., DeSmet, A., Lauwerier, E., Leta, K., & Crombez, G. (2024). A mobile healthy lifestyle intervention to promote mental health in adolescence: a mixed-methods evaluation. *BMC public health*, 24(1),44. <https://doi.org/10.1186/s12889-023-17260-9>