

Exercise Based In-Service Training To Primary Healthcare Staff For Physical Activity Promotion Among The Public In Sri Lanka

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Abstract—Introduction: Although Sri Lanka has a well-established preventive and curative healthcare system, physical inactivity, which is one of the four main risk factors for development of NCDs is prevalent among one third the adult population. Implementation of in-service trainings in relation to reduction of physical inactivity and sedentary behavior has not been carried out in a uniform manner in Sri Lanka.

Aim: To describe the design, implementation, monitoring and evaluation of a novel exercise based in-service training strategy for primary care health staff on promotion of physical activity among the public.

Methods: The existing mechanism for promotion of physical activity among the public by the primary care staff was reviewed and challenges and limitations were identified. A series of consultative meetings were conducted with the participation of all stakeholders to develop a Training of Trainers (TOT) manual on physical activity guidelines for the public. In order to overcome the deficiencies identified a novel strategy was developed for the implementation of in-service trainings on the developed TOT manual at the Healthy Lifestyle Centers. A post training evaluation was conducted among the trainees three months after the training.

Results: Out of the trainees, 138 (76.6%) responded to the post training follow up evaluation. Mean age of participants was 40.09 years (SD =7.18). Majority of the respondents were females (N=101, 73.2%). There were, 44 (31.8%) Medical officers, 45 (32.6%) Nursing Officers, 20 (14.5%) Public Health Nursing Officers, 11 (7.9%) Public Health Midwives, 2 (1.4%) Public Health Inspectors and 16 (11.5%) other staff members among the participants. The median satisfaction score was 7.9 out of 10. There was a significant improvement in competency following the training ($X^2 = 44.6$, Df=1, $P < 0.05$).

Conclusions and Recommendations: The novel strategy is effective and was received with enthusiasm by the target audience. Possibility of implementing similar strategies for risk reduction of other modifiable NCD risk factors must be explored.

Keywords— Physical activity training; exercise programs; Healthy Lifestyle Centers; prevention of Non-Communicable Diseases

I. INTRODUCTION

The rise in the prevalence of chronic Non-Communicable Diseases (NCDs) has created a public health threat around the globe. According to World Health Organization, in the year 2019, 74% of world deaths were the result of chronic NCDs (1). This situation is worse in low and middle-income countries who are faced with the dual burden of NCD as well as communicable diseases. NCDs are the main cause of mortality in Sri Lanka, with ischemic heart disease being the number one cause for hospital mortality (2). NCDs are estimated to have accounted for 83% of all-cause mortality and 17% premature (30-70 years) mortality in Sri Lanka in the year 2016 (3). In the same year, 36% of the total current health expenditure, was spent for the management of NCDs (4). Chronic NCDs being long term diseases, cause great economic losses to individuals and families due to absenteeism, reduced work capacity

and expenditure for treatments and investigations. Due to rising elderly population and urbanization associated lifestyle changes in Sri Lanka, this burden will further increase in the future.

Evidence suggests that physical inactivity leads to NCDs while being the fourth major lifestyle related risk factor for global burden of diseases (5). The national NCD risk factor survey (STEPS) 2015 reported that 30.4% of the Sri Lankan adults aged 18-69 years are not adequately physically active, which puts them at a higher risk for NCDs. Females (38.4%) were reported to be more inactive than males (22.5%) during this survey (6).

Further it has been estimated that in Sri Lanka, physical inactivity accounts for coronary heart disease [population attributable risk fraction (PAF) = 4.3; 95% CI: 1.6 – 7.1]; diabetes (PAF= 5.3; 95% CI: 2.7-8.3); breast cancer (PAF=8.7; 95% CI:4.2-13.5); colon cancer (PAF=7.7; 95% CI: 4.2-11.1); and all-cause mortality (PAF=6.9; 95% CI: 5.5-8.3) (7). Thus, reducing physical inactivity among the Sri Lankans would contribute significantly to prevention and control of NCD epidemic in the country.

Personal, social and environment related factors could lead to physical inactivity in an individual. Debilitating health problems, busy time schedules, poor awareness, unfavorable attitudes, lack of facilities, safety issues and lack of a conducive environment have been shown to influence Sri Lankan population to be physically inactive. Being physically active is a novel habit to most Sri Lankans despite years of creating awareness (8). Physical inactivity being one of the main modifiable lifestyle related risk factor the Directorate of NCD, Ministry of Health, Sri Lanka has established a separate unit for the National Program for Promotion of Physical Activity. Risk reduction through health promotion is one of the key strategies identified in the multi sectoral action for prevention and control of NCDs in Sri Lanka (9). It is expected that by empowering people to engage in physical activities, they will have more control over their health status. To ensure the sustainability of this lifestyle change it is imperative that the target population is empowered with knowledge, attitudes and skills pertaining to an active lifestyle as well as they are provided guidance by well-trained health staff.

Healthy Lifestyle Centers (HLCs) is a national programme initiated and implemented by the Directorate of NCD, Ministry of Health, Sri Lanka (10). In the 1022 HLCs scattered across the country's primary healthcare institutions, NCD early detection and lifestyle modification related services are provided. In addition to NCD diagnosis and referral, clients are provided with health promotion oriented individual counselling and brief interventions for lifestyle change. Staff at the primary healthcare level are the first contact for the public and it is essential to ensure that they have the capacity and skills on promotion of healthy lifestyle including physical activity. Therefore, the objective of this study was to develop a novel in service training strategy for the primary health care staff to make them well equipped and competent on how to promote physical activity among the general public who attend HLCs.

II. METHODS

A series of consultative meetings were conducted with the participation of all stakeholders to review and identify limitations in the existing mechanism for promotion of physical activity among the general public by the primary care staff. Based on the findings a Training of Trainers (TOT) manual on physical activity guidelines for the general public was developed with the contribution from all the stakeholders. The stakeholders who participated represented experts in Sports and Exercise Medicine, public health, other professional colleges and district level Medical Officers for control and prevention of NCDs (MO NCD). The developed TOT Manual was intended to train master trainers on knowledge and practical skills of promoting physical activity. A series of power point slides for the whole manual was developed so that master trainers can use them for future trainings, which was included in a compact disk and attached to the manual. The Printed manual along with the compact disk was provided to master trainers who underwent training.

A novel strategy was developed for the implementation of in-service trainings on the developed TOT manual. The training strategy involved trainings of two strata of officers involved in NCD service provision. The MO NCD who are district level coordinators and the link between the Directorate of NCD and primary care staff, were first trained on the TOT. Secondly, the trained MO NCD organized a training for the HLC staff; Medical Officers, Nursing Officers, Public health nursing Officers and other staffs who are expected to conduct lifestyle modification counseling for HLC clients.

Trainings were carried out in randomly selected ten districts out of the twenty-six districts in Sri Lanka; Matale, Anuradhapura, Matara, Galle, Hambanthota, Gampaha, Kaluataru, Rathnapura, Kurunegala and Nuwara Eliya. The training consisted of three main

components, basic knowledge on physical activity and parameters of physical fitness, interactive practical demonstration of aerobic, strengthening, flexibility and balance exercises and motivational interviewing and brief interventions for promoting physical activity. The three components were conducted by public health experts, sports and exercise medicine experts and health promotion experts respectively. All the participants underwent an assessment of their suitability to participate in the exercise component using 'Physical Activity Readiness Questionnaire' (11) and those who got through the screening participated the exercise component. The program was evaluated qualitatively as well as quantitatively.

An evaluation was conducted after three months of the training to assess effectiveness and level of implementation of the training strategy among the participants (Medical Officers, Nursing Officers and Public Health Nursing Officers attached to the HLC and other public health staff such as Medical Officers of Health, Public Health Midwives and Public Health Inspectors) of the selected districts; Matale, Anuradhapura, Matara, Galle, Hambantota, Gampaha, Kaluatar, Rathnapura, Kurunegala and Nuwara Eliya in April 2021. The final sample size was calculated using formula $n = Z^2 P (1-P) / d^2$ (12). The expected proportion (P) of individuals with adequate knowledge was taken as 50% due to unavailability of data which gave the largest sample size, Z was taken as 1.96 corresponding to a confidence interval of 95% with a precision of 7.5%. With consideration of 5% non-response rate, final sample size was 180. Simple random sampling technique was used to recruit the participants to the study. All participants who received training were listed in alphabetical order, each were given a unique identification number, and the required sample was identified by using computer generated random numbers. The recruited participants were contacted via online platforms such as e mail, WhatsApp and Viber. A self-administered questionnaire was developed to assess the output/outcome indicators, perception of pre and post knowledge/skills, satisfaction, establishment of an exercise program at the institution and use of knowledge gained for physical activity promotion and descriptive statistics are presented.

III. RESULTS

The key weaknesses identified in the existing physical activity promotion strategy highlighted during the consultative meetings were training sessions being not uniform across different institutions and districts, conventional teaching methods such as lectures were being used, training sessions mainly focused on one staff category and post training evaluations were not done. The novel strategy developed based on the findings of the consultative meetings concluded that a structured training module must be developed while including both theory and practical sessions related to physical activities, the teaching methods should include practical demonstrations with active participation of trainees, the trainings should be conveyed to institutional level through district level MO NCD and should be monitored and evaluated through a centrally coordinated monitoring system.

Total number of participants who recruited to the study were 180 and 138 (76.7%) of them responded to the post training follow up evaluation. Mean age of participants was 40.09 years (SD =7.18) and majority of them belonged to the age group 35 – 40 (N=48, 34.7%) years, others were: 23-34 (N=29, 20.9%), 41 – 46 (N=34, 24.6%), 47-58 (N=27, 19.4%). The majority were females (N=101, 73.2%).

There were almost equal number of Medical Officers (N=44, 31.8%) and Nursing Officers (N=45, 32.6%), with 20 (14.5%) Public Health Nursing Officer, 11 (7.9%) Public Health Midwives, 2 (1.4%) Public Health Inspectors and 16 (11.5%) other staff members. The majority (N=94, 68.0%) were attached to Primary Healthcare level while 31 (22.4%) to the RDHS and 13 to MOH (9.4%).

The frequency distribution of the opinion of the study participants on the training programme are shown in Table 1.

Table 1: The frequency distribution of the opinion of the study participants on the training programme

Response	Number	Percentage
Opinion of the balance of lecture and practical session in this training program		
Too much lecture and not enough practical demonstration	7	5.0%
Right amount of both lecture and practical demonstration	102	74.0%
Too much practical demonstration and not enough lecture	5	3.6%

Not enough lectures and practical sessions and videos	20	14.4%
Not enough time to complete the session	2	1.5%
Right number of lectures and not enough practical sessions	2	1.5%
Opportunity given to actively participate in practical demonstrations during the training program		
Yes	133	96.3%
No	5	3.7%
Response on how easy to follow and understand the training program		
Not at all easy	2	1.4%
Slightly easy	3	2.2%
Moderately easy	52	37.6%
Very much easy	64	46.4%
Extremely easy	17	12.4%

Among the respondents, 74% (N= 102) thought that the training contained right number of lectures and practical demonstrations while, 96.3% (N= 133) stated they were given opportunity to actively participate in the practical component. Majority 81 (58.8%) reported the training was very easy to follow and understand while 52 (37.6%) reported the understandability and clarity as moderate.

Mean satisfaction score in a scale from 1=extremely dissatisfied to 10=extremely satisfied was 7.9 (SD = 1.38, median = 8, IQR = 2, range 5.0 to 10.0). Table 8 shows the feedback given by the staff members in relation to overall self-perceived competency in physical activity promotion among the public before and after the training. There was a statistically significant higher post intervention competency ($X^2 = 44.6$, Df=1, $P < 0.05$). The overall self-perceived competency in physical activity promotion among the general public pre and post training is shown in Table 2.

Table 2: Overall self-perceived competency in physical activity promotion among the public

	Competent n (%)	Incompetent n (%)	Significance
Before the training	77 (55.7%)	61 (44.3%)	$X^2 = 44.6$
After the training	126 (91.3%)	12 (8.7%)	Df=1 $P < 0.05$

Among the suggestions given by the participants to further improve the training program, majority 40 (28.9%) suggested to provide videos with practical demonstrations, 28 (20.3%) suggested to improve the total duration of the training program, 21 (15.3%) suggested to increase the time allocated to the practical component and 12 (8.7%) suggesting to conduct refresher trainings.

Table 3 summarises responses related to the use of knowledge and skills obtained from the training. The majority of participants

97 (70.3%) stated that knowledge on physical activity and physical fitness was learnt while only 24 (17.3%) have learnt to do motivational interviewing or a brief intervention to promote physical activity. After the training, 77 (55.4%) participants were able to start an exercise program at their institutions but only 12 (8.7%) stated that they are having currently functioning programmes. However, 15 (10.8%) participants could not use the knowledge/skills gained from this training. Required exercise instruments were available only among 43 (31.2%) and required space was available only among 36 (26.0%) of the participants to practice their knowledge gained by the training. Among identified barriers to implement a physical training program, Covid 19 pandemic was mentioned by the majority 33 (24%) while poor support given by the head of the institution was reported among 27 (19.6%) of participants.

Table 3: Responses related to the use of knowledge and skills obtained from the training.

Response	Number	Percentage
What did you learn new from this training?		
Knowledge on physical activity and physical fitness	97	70.3%
Practical skills on exercises	17	12.4%
How to do motivational interviewing to promote physical activity	22	15.9%
How to do a brief Intervention to promote physical activity	2	1.4%
How did you use the learning from this training in your service provision?		
I started an exercise program at my institution and it is still functioning	22	16.0%
I started an exercise program at my institution but it is not functioning now	55	39.8%
I used the knowledge/skills to counsel HLC clients	34	24.7%
I used the knowledge/skills during public awareness programs to the community	12	8.7%
I could not use the knowledge/skills gained from this training	15	10.8%
What facilitated your use of learning from this training?		
I had the required exercise equipment	43	31.2%
I had the space needed to start an exercise program at my institution	36	26.0%
I had opportunities to start training on physical activity	23	16.7%
I had time to start training on physical activity	10	7.3%
My head of institution supported me to start training on physical activity	13	9.4%
Other staff in my institution supported me to start training on physical activity	13	9.4%
What are the barriers you faced when trying to implement what you have learnt?		
I need additional training on physical activity promotion	23	16.7%
I did not remember the course content well enough to start training on physical activity	6	4.3%
I used the knowledge/skills to counsel HLC clients	23	16.7%
I did not have enough space in my institution to start training on physical activity	15	10.8%

I did not have opportunities to start training on physical activity	4	2.9%
I did not have the time to start training on physical activity	5	3.6%
My head of institution did not support me to start training on physical activity	27	19.6%
Other staff members in my institution did not support me to start training on physical activity	2	1.4%
Could not initiate/had to stop the exercise program due to the COVID 19 outbreak	33	24.0%

IV. DISCUSSION

Physical activity promotion is a difficult task since it involves human behavior modification. Any behavior modification cannot be achieved by a single step, and it is a cyclical process (11). There was no literature from Sri Lanka on a national level structured physical activity promotion program as outlined above. However, at subnational level and at selected geographical areas physical activity promotion programs have been initiated (13).

What is noteworthy is that the novel strategy introduced in this study focuses on capacity building of service providers and encourages them to be role models for clients. Further, it is institution based and physical activity promotion is recognized as a service responsibility of the trained staff. Empowered health care staff are encouraged to initiate an exercise program with the participation of HLC clients. According to study findings, majority of trainees had initiated an exercise program at their institutions which shows the success of the novel strategy. The prevailing COVID 19 outbreak was probably the reason why either the trainees could not initiate an exercise program or had to discontinue the programs temporarily since most health staffs were re-allocated for COVID 19 care units. Also, the imposed social and travel restrictions must have discouraged client participation.

Another unique feature of the novel strategy was the practical demonstrations and hands on experience using basic exercise equipment. As shown in the results majority enthusiastically participated in the practical component and stated that the training contains the right number of lectures and practical demonstrations. It is expected that the practical demonstrations and hands on skills will be most useful for the trainees to initiate an exercise program and actively participate in the program with the clients. However practical skills related to exercises cannot be learnt by participating a single program and a sizeable proportion of participants had expressed the need for a refresher training.

World Health Organization, global action plan on physical activity 2018-2030, identifies creating an active environment by building safe spaces and places to be physically active, creating active societies through provisions of opportunities and active programs, creating active people by improving knowledge and skills of the population and creating active systems through policy changes as prerequisites for promoting physical activity (14). This novel strategy attempted to create active people and an active society according to this framework. However, physical activity promotion is challenging in settings where there are inadequate provisions to be physically active. Our evaluation shows that some trainees were unable to start an exercise program due to lack of space at the institution and due to lack of support extended by the head of institution. Thus, it is important to advocate to relevant authorities on the importance of physical activity promotion parallel to capacity building of the staff to ensure that necessary support is extended.

V. CONCLUSION AND RECOMMENDATIONS

We conclude that the implemented novel training strategy on physical activity promotion as a successful initiative with high client satisfaction. This training strategy will be extended to all the districts of Sri Lanka. We recommend taking up of similar structured institution based physical activity programs in all settings where physical activity promotion is a timely requirement.

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