

# Physical Activity in Building Stronger Community

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## ABSTRACT

Inadequate Physical Activity (PA) is one of the major risk factors contributing to global mortality. Community Wide Intervention (CWI) to increase PA at the community level is effective not only in the prevention but also in the control of Non Communicable Diseases (NCDs). In our analysis, we could observe that CWI are not satisfactory on the basis of their methodology and varying results. This article is a commentary on the study conducted by Kamada M et al. We could also infer that the standardised tool in measuring PA is not adequate and therefore, suggest to include comprehensive measurements such as anthropometric indices, diet and calorie calculations in future studies. The period of intervention usually recommended is six months to seven years to bring effective change in the PA among the total population. Studies should focus on adverse outcomes like unintended risk factors, injuries, and cost. We recommend multicomponent interventions like social marketing through mass media, individual counselling, screening of risk factors, focusing on target groups like adults, children, older people, and disabled people. Conducting interventional studies in workplace and creating access for PA would yield better results. We also suggest new strategies such as improving physical education in students, integrating physical education in their regular curriculum, encouraging change in physical behaviour and providing suitable environment for the physical activities.

**Keywords:** Multicomponent interventions, Non communicable diseases, Physical inactivity, Structured strategies

## COMMUNITY WIDE PROMOTION OF PHYSICAL ACTIVITY IN MIDDLE AGED AND OLDER JAPANESE: A 3-YEAR EVALUATION OF A CLUSTER RANDOMISED TRIAL

With community as the unit of randomisation and individual as the unit of analysis the cluster randomised trial was conducted by Kamada M et al., [1]. The trial was done as a 3-year community wide promotional activity in middle aged and older Japanese with hypothesis of 3-year CWI when delivered at community level would promote engagement in recommended levels of aerobic, flexibility and/or muscle strengthening activities. Although, the study was planned for one year, it was extended to three years as no significant effect on population level change in PA was seen. This extension was after the approval by the Research Ethics Committee of the physical education and medical research centre (UNNAN). Out of 32 communities in UNNAN, 12 communities were randomly sampled, with stratification by blocking within population density category strata and randomly allocated to three intervention clusters and one control cluster. Each interventional cluster group was randomly allocated to aerobic activity promotion (Group A), flexibility and muscle strengthening activities promotion (Group FM), aerobic, flexibility and muscle strengthening activities promotion (Group AFM).

The intervention period of CWI comprised of Information delivery (flyers, leaflets, banners etc.), education delivery (case report form) and support delivery. The intervention was divided into two phases (November 2009 to October 2010, November 2010 to October 2012). Phase 1 consisted of delivery of knowledge and information to the community. This was done predominantly via audio and video information and educational activities. The change in engagement in PA was perceived as the primary outcome. Engagement in PA was defined as engaging in 150 minutes/week or more of

walking, engaging in daily flexibility activity and engaging in muscle strengthening activities two or more days/week. The secondary outcome measured was occurrence of musculoskeletal pain. This had similar approach and outcome as Phase 1 except that local visits were increased and decreased use of educational activities and information were less prevalent. The material support was not implemented owing to their lower influence.

A total of 4414 participants' data were analysed by intention to treat. The primary analysis revealed that the CWI did not significantly increase the overall PA over the 3-year period. Although, each activity showed positive value of adjusted change difference, it was not statistically significant {adjusted change difference of % those who met the recommendation between intervention and control = 1.6% (95% confidence interval: 3.5, 6.6)}. In sub-group analysis, the proportion of adults doing flexibility activity daily was significantly increased {adjusted change difference 6.3% (1.9, 10.7)}. Largest effect size were also found for walking in group A and for muscle strengthening activity in group FM but both are not statistically significant. In AFM group, there were no changes. There was also no significant change in pain outcomes.

## COMMENTS ON METHODOLOGY

This trial was a well-designed and well-conducted randomised clustered clinical trial with structured summary. The cluster RCT with the whole community level and prospective cohort design at individual level are the strength for the study. Sample size calculation has been mentioned in the article with the participants being allocated by computer generated random numbers. The statistical methods used for comparing groups for outcomes were appropriate. The steps included for random allocation, method of allocation concealment, blocking is not well presented in this paper.

## STRENGTH AND WEAKNESS OF THE STUDY

The study examined all the aspects of Reach, Effectiveness, Adoption, and Implementation except Maintenance (RE-AIM). Using standard protocol, training of core team staff members and utilisation of existing resources is appreciable. However, it should be noted that three years or longer duration is required for CWI to achieve population level behavioural change. The author had not addressed the risk of attrition bias and recall bias. The cluster allocated to each study arm is relatively small as mentioned by the author. The implementation of dose of intervention varied with each cluster might be the cause for varying results. The author failed in prevention of the potential contamination of participant.

## REVIEW OF LITERATURE

CWIs for PA are increasingly popular but their ability to achieve population level is unknown. It is evident from previous studies that there exists lack of competent studies that could deduce whether the approach was beneficial. Noticeable inconsistencies of the findings confounded by serious methodological issues within the included studies depose several similar studies [2,3]. So far 33 studies out of 267 communities which varied in sample size and location (rural/urban) shows not only implementing CWI can increase the PA, emphasised on envisaging long term programmes [4]. Studies reported that medium or high intervention can bring positive effect for subgroups (e.g., gender, age) than overall CWI [4,5]. Evidence shows that study conducted in stepped wedge cluster randomised trial has low risk of bias comparing to randomised trial [6]. There is lack of standardised tool for measuring PA in previous studies [5].

Insufficient PA is one of the 10 leading risk factors for global mortality. NCD contributes to around 5.87 million deaths that accounts for 60% of all death in India. Physical inactivity majorly accounts for the behaviour risk factor of NCD. Globally around 23% of adults aged 18 years and above, 81% adolescents aged 11-17 years are inactive [7]. The level of physical inactivity among Indian adolescents is about 13% [7,8].

The importance of PA as a means of NCD prevention and control is recognised in developing countries, as well as the need for CWI, suitable programmes, policies and guidelines [8].

Emphasis should be made on the precision and accuracy of the measurement of PA in recurrence and the allocation to intervention and control communities [5]. The period of intervention required is usually six months to maximum of seven years to bring behavioural change and effectiveness of PA [5,8]. However, the age of the population described by the author is too old to bring out the habit of PA in developing country like India. There is an impending need for development of a standardised study tool that measure PA. Additionally including anthropometric indices, awareness of diet and calorie intake studies to be planned in Indian subcontinent not only adds to the strength but also provides screening of NCDs [9].

## NEW STRATEGIES

In addition, the outcome of the studies should focus on measures of health outcomes like energy expenditure measures, sedentary behaviour, dietary patterns and adverse outcomes such as unintended changes in other risk factors, opportunity cost, and injuries [5].

Multicomponent interventions adopted by other countries including social marketing through local mass media (television, radio, newspaper), individual counselling by health professionals (both public and privately funded), public and private partnership to encourage participation in sports and other such events, screening of risk factors, as well as targeting different population groups like adults, children, older people, disabled people, indigenous people and settings like worksite, schools, community would yield a better result [9,10].

In case of children, the better strategies are to be implemented to improve the standard of physical education at elementary level in schools, integrate physical education in their curriculum and to provide the subsequent environment for the PA [3]. Individually-adapted health behaviour change programmes tailored to individuals' specific needs, preferences, and readiness for change is to be focussed. Creation of access to places for PA, reducing fees, changing operating hours of facilities combined with informational activities aimed at increasing awareness, education and motivation shall be very effective in achieving the healthy life.

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