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Research Article

A RESEARCH STUDY TO EVALUATE THE EFFECTIVENESS OF INTERNET TOOLS ASSISTED FACILITIES AND STANDARD LETTER RECOMMENDATION TO IMPROVE PHYSICAL ACTIVITY AMONG CANCER SURVIVORS

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Abstract:

Objective: The aim of this research was to assess the efficacy of internet tools (print-based facilities) for the improvement of physical activities among the survivors of cancer in comparison with standard letter recommendations. Physical activity improvement was hypothesized through self-efficacy and pre-diagnosis of physical activity.

Methods and Patients: This the design of the research was cost-consequence analysis and RCT which was carried out at Bach Mai Hospital, Hanoi, Vietnam from August 2018 to February 2019 on adults who survived from cancer and also became physically active. We treated 104 patients with print-based intervention with the support of internet tools and 103 patients with standard letter recommendation. Interventional arm physical activity and maintenance were respectively evaluated at 12th and 24th Week. We also completed cost-analysis and required a number for the treatment.

Results: Over the time period of twelve weeks 36.9% of patients improved their physical activity along with control arm (9.1%). Interventional arm physical activity was also maintained at 24th week. Interventions were required among 6.29% survivors of cancer; whereas, one improved his physical activity through a standard letter of recommendation. Per person delivery cost of the intervention was (£8.19). Self-efficacy and pre-diagnosis of physical activity did not predict the improvement in physical efficacy.

Conclusion: Print-based intervention with internet tools support is a low-cost approach to improve physical activity among survivors of cancer.

Keywords: Cancer, Behaviour Change, Support, Internet, Low-Cost, Print Based Intervention, Physical Activity and Maintenance.

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INTRODUCTION:

Literature suggests that clinical and functional outcomes of physical activity improve before, during and after treatment among patients affected by any type of Cancer as physical activity poses no harm with guidance about the amount of physical activity and suitable screening [1 – 3]. Just 23% of cancer survivors of Vietnam adhered to the guidelines of aerobic physical activity [4]. Different activities related to cancer are inaccessible and costly which need scalable remote cost-effective interventions to support cancer survivors [5]. Cancer survivors prefer home base physical interventions which can be accessed through video, internet and mail [6, 7]. Home-based facilities help and facilitate cancer survivors to continue both physical activity and related commitments with flexibility [8].

Mixed outcomes have been achieved about varying lifestyles and physical activity [5]. Majority of the interventions offer one to one support such as by telephone, in-person and mail which has presented a positive shift in the life quality and physical activity [9 – 13]. Goode reports about the improvement through evaluation enhancement, cost-effectiveness and novel integrated modalities along with the combination of internet and print modalities [14]. Behaviour change theories (30%) explain the detailed application of healthcare behaviour and public health [15, 16]. Interventions' detail should encompass development detail, behaviour change theories, associated theoretical constructs and intervention components [17].

Physical activity barrier can be crossed through self-efficacy among cancer survivors by consulting available general related literature [18]. Past studies place self-efficacy first but also focus on the change markers and predictors [11, 12, 19]. Those who were physically active before cancer are more likely to be active in the course of fighting cancer and afterwards [20]. There is no association between treatment status, received treatment, time since diagnosis, cancer stage, tumour site, cancer comorbidities and adherence to physical activity [20]. Demographic and clinical features also do not indicate life quality improvement among cancer survivors as an outcome of physical activity [21]. Generally, old aged and females are less involved in the routine of physical activity [22]. This research explains the assessment and development of internet-supported print-based intervention also known as “Move More Pack”. The objective of this research is to explore the effects of “Move More Pack” on the patient’s physical activity, cancer survivors’ life quality and self-efficacy in the course of twenty-four

weeks. The hypothesis presents that “Move More Pack” increases the proportion of physical activity among cancer survivors in the course of twelve weeks with maintained proportions for a period of twenty-four weeks. Cost sequence analysis is also a suggested public healthcare approach [23].

PATIENTS AND METHODS:

The research was conducted in accordance with set protocols, embedded assessment process and outcomes [24, 25]. The Move More Pack aims at the effect change on the physical activity of the cancer survivors with respect to cancer status and site. It was redeveloped and evaluated as a complex intervention in the light of the Medical Research Council [26]. Selection of patients was made through an invitation sent by email. It was not possible to assess the total number of cancer survivors who viewed the posted invitation of Facebook. Total 1019 cancer survivors showed interest and became a part of the research. Patients were assessed for the impact of health, lifestyle and health promotion. We included those patients who were above 18 years of age, was able to read English, used internet and computer and managed email account. The Move More Pack do not recommend physical activity instead its objective was to increase the control over physical activity with their will. Related information of safety was also sent to the participants with standard letter recommendation. Safety information was according to information standards of NHS [27]. However, few cancer survivors also required medical advice before commencement of the physical activity. A questionnaire was also planned for screening in the guidelines of Sports medicine [28]. We gathered information about gender, date of birth, time since diagnosis, cancer type, time since treatment completion, treatment received, response to treatment and ethnic classification to evaluate baseline features between arms. Questions were in accordance with the Health Survey guidelines of the UK [29]. Participants were asked about the consideration of physical activity in one week before the diagnosis of cancer, e-newsletters tailoring, the pre-diagnosis predictive value of the physical activity, improvement in the physical activity and the baseline measure of standard physical activity. Move More Pack effectiveness at self-efficacy, improvement in the physical activity and life quality at 12th and 24th week in control arms and intervention. Patients were also asked that if they have used Move More Pack at 12th week. Internet tools were also assessed at an interval of 12 and 24 weeks among intervention arm patients. Qualtrics™ software was used for data collection and processing [30]. Physical activity, life quality and self-efficacy was evaluated by ANCOVA at 12th week between arms in order to

control the baseline features. Physical activity was also evaluated for gender and age. Groups variations were evaluated by paired T-Test. Small activities are good for a better change in the health [31]. We also used two proportioned Z-test and binary logistic regression. Cost-consequence analysis was conducted by intervention delivery costs. SPSS was used for statistical analysis.

RESULTS:

The study did not include any over recruited participant. There was intervention arm (104) and control arm (103) patients which is more than planned participants (99 per arm). Table – I shows baseline features of both intervention and control arm.

In this research, 23.7% participants were more than 65 years of age. Females were dominating males as we included 73.9% females. A research presented the onset of breast cancer (27.6%), prostate cancer (13.2%) and colorectal cancer (11.6%) [32]. It is comparable with breast cancer (38.2%), prostate cancer (6.8%) and colorectal cancer (13.0%). Planned management was carried out among all the study participants. Unfortunately, one participant of control arm group did not survive between 12th and 24th week. Multiple issues were solved without marking any specific issue. Patients were also debriefed.

There was an improvement in the physical activity of intervention arm (9.58 ± 23.14) in the course of 12 weeks than the control arm (2.61 ± 24.10). Intervention arm 104 (63.5%) patients improved

physical activity than 103 (47.6%) control arm patients. There was a significant correlation between Move More Pack, gender, age and physical activity. Active intervention percentage was maintained from 12th to 24th week with a slight increase from 44.2% – 51%. Mean score of physical activity in the course of 12 – 24 weeks was (35.57 ± 23.71) to (40.84 ± 34.85). Regression analysis failed to find pre-diagnosed physical activity and self-efficacy to be a marker of improvement in physical activity.

There was no difference in terms of self-efficacy between both control and intervention arm at 12 weeks. There was an increase in the self-efficacy within intervention and control group at 12 weeks which even increased from 12 to 24 weeks. Baseline features also shown improvement for self-efficacy. In order to control the arm Move, More Pack improved self-efficacy between 12 – 24 weeks. Both control and intervention arm did not show any difference in terms of HRQoL at 12 weeks. Significant improvement was observed within groups for HRQoL; whereas, the baseline increased to 24 weeks.

Per person cost for Move, More Pack was (£8.19) which 8.6 times more in comparison to the cost of standard letter recommendation (£0.95).

Detailed outcomes about baseline features, Physical activity score, Self-efficacy, Health-related quality of life and physical activity classification for control and intervention arm are given in the tabular and graphical presentation.

Table – I: Baseline Features

Characteristic		Intervention (104)		Control (103)		Overall (207)	
		No	%	No	%	No	%
Gender	Male	29	27.9	25	24.3	54	26.1
	Female	75	72.1	78	75.7	153	73.9
Age (Years)	0 – 44	15	14.4	15	14.6	30	14.5
	45 – 64	68	65.4	60	58.3	128	61.8
	Above 65	21	20.2	28	27.2	49	23.7
Ethnicity	White British	96	92.3	94	91.3	190	91.8
	Other white	4	3.8	6	5.8	10	4.8
	Black or UK minority ethnic group	4	3.8	3	2.9	7	3.4
Cancer	Breast	39	37.5	40	38.8	79	38.2
	Colorectal	12	11.5	15	14.6	27	13
	Prostate	8	7.7	6	5.8	14	6.8
	Others – mixed	45	43.3	42	40.8	87	42

Time Since Diagnosis	1 year or less	40	38.5	33	32	73	35.3
	one–5 years	39	37.5	48	46.6	87	42
	More than 5 years	11	10.6	13	12.6	24	11.6
	No answer	14	13.5	9	8.7	23	11.1
Treatment Status	Treatment completed	69	66.3	70	68	139	67.1
	In treatment	31	29.8	33	32	64	30.9
	Not started treatment	3	2.9	0	0	3	1.4
	No answer	1	1	0	0	1	0.5
Cancer Status	In remission or cured	55	52.9	65	63.1	120	58
	Treated but cancer still present	13	12.5	15	14.6	28	13.5
	Cancer has come back since treatment	6	5.8	5	4.9	11	5.3
	Cancer present, no treatment received	3	2.9	0	0	3	1.4
	Not known	27	26	18	17.5	45	21.7

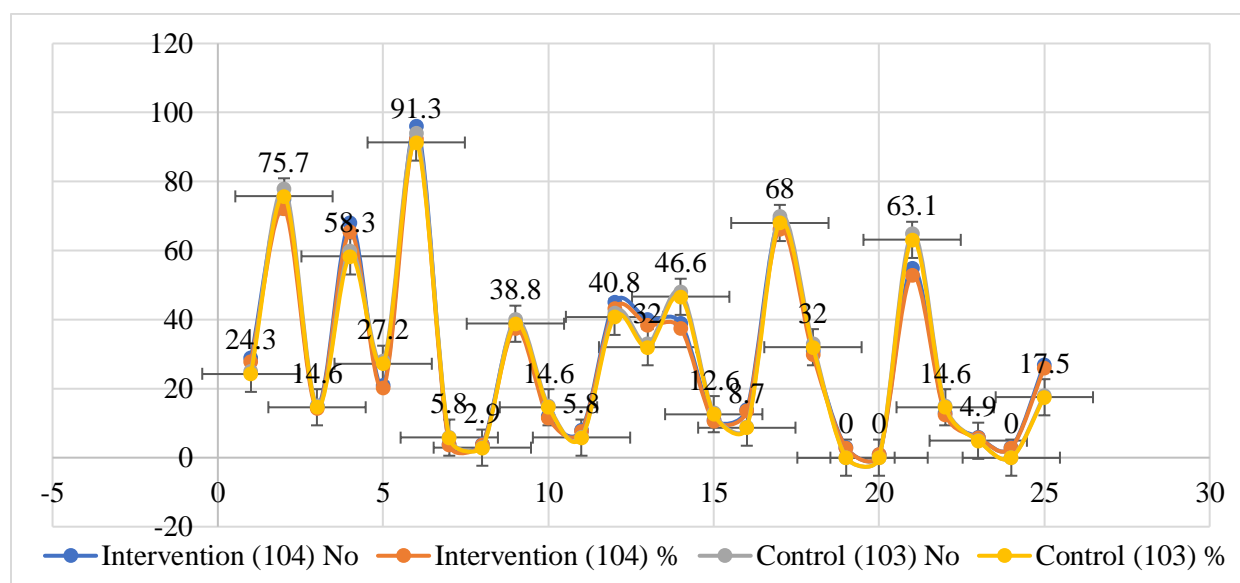


Table – II: Intervention Versus Control Arm

Variables	Intervention						Control					
	Baseline		12 weeks		24 weeks		Baseline		12 weeks		24 weeks	
	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD
Physical activity score	25.99	19.4	35.57	23.7	40.84	34.9	28.7	24.1	31.31	22.7	39.49	29
Self-efficacy	4.89	2.44	5.41	2.59	5.84	5.84	5.2	2.67	5.44	2.55	5.38	2.39
Health-related quality of life	16.85	4.7	17.8	5.16	18.32	5.26	17.24	5.22	18.46	4.99	19	5.27

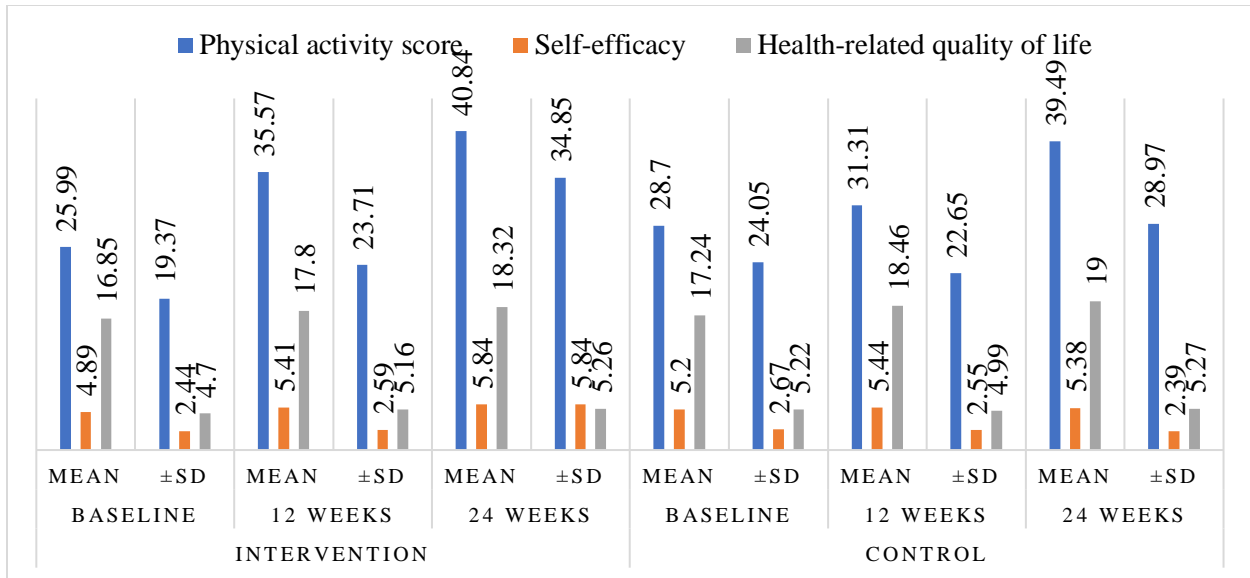


Table – III: Intervention Arm (Physical Activity Classification)

Activity	Baseline	12 Weeks	24 Weeks
Active	24.04	16.35	59.62
Moderately Active	44.23	19.23	36.54
Insufficiently Active	50.96	19.23	29.81

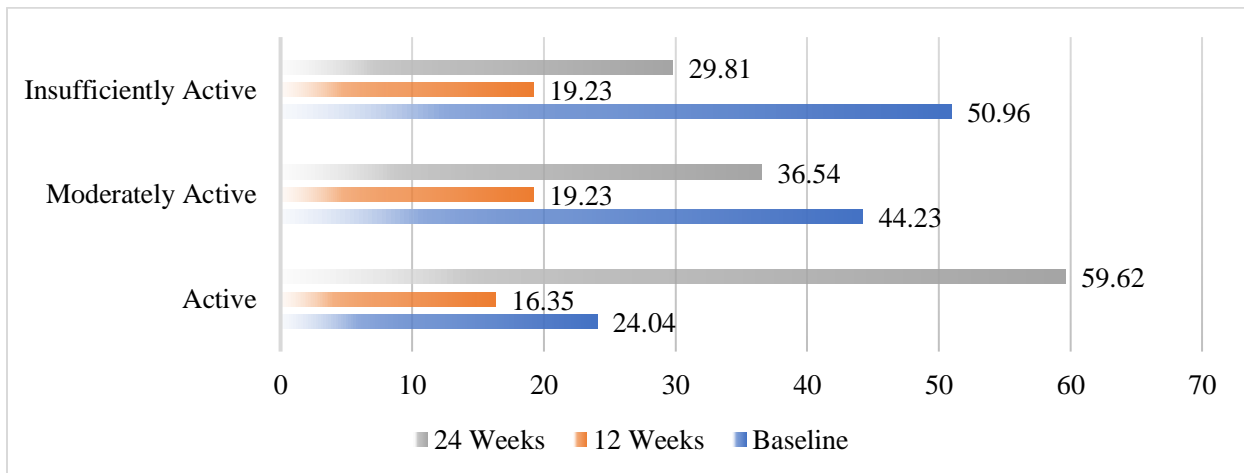
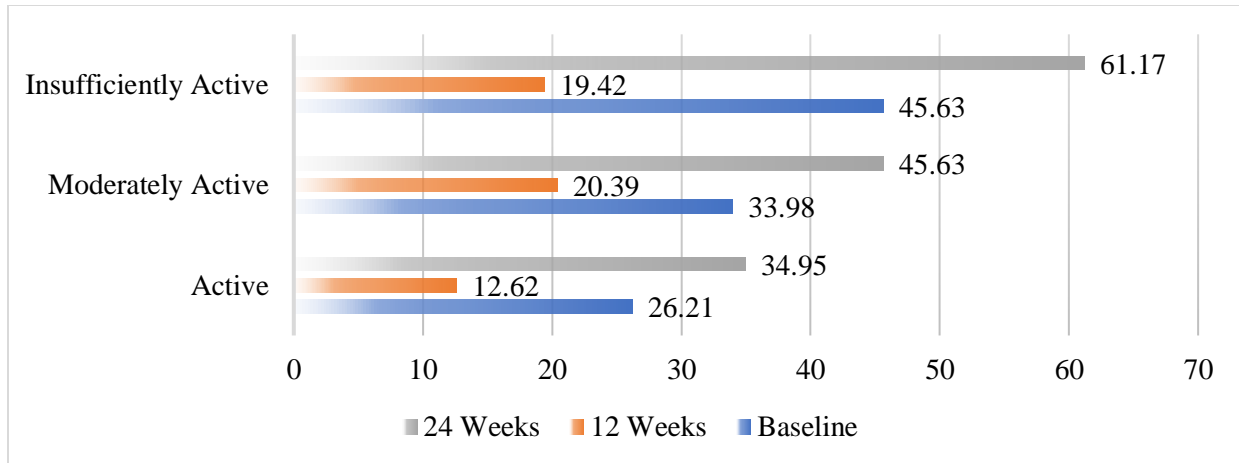


Table – IV: Control Arm (Physical Activity Classification)

Activity	Baseline	12 Weeks	24 Weeks
Active	26.21	12.62	34.95
Moderately Active	33.98	20.39	45.63
Insufficiently Active	45.63	19.42	61.17



DISCUSSION:

The objective of this research was to explore the efficacy of Move More Pack at enhancing the physical activity, HRQoL and self-efficacy among cancer survivors. The aim of this research was to assess the efficacy of internet tools (print-based facilities) for the improvement of physical activities among the survivors of cancer in comparison with standard letter recommendations. Physical activity improvement was hypothesized through self-efficacy and pre-diagnosis of physical activity. A healthy lifestyle was adopted by those who were engaged with Macmillan. Those were also more physically active. Younger age group was mostly engaged with Macmillan. Most of the less active participants were removed from the study which left most of the active participants. A higher proportion of the active participants was left in the research population as the less active were inadvertently removed from the sample population. It is important due to medical approval before being an active member of the study population. We need to understand the outcomes which are explained in the backdrop of cancer survivors which were active without prior medication. Among different types of cancer breast cancer was more than prostate cancer among the survivors of cancer. Colorectal cancer was also present in comparable numbers among patients. Any physical activity improvement was taken as positive [32]. The chances of improvement of physical activity are 33% more in Move More Pack than standard letter recommendation. Our research indicates that at 12-week active classification is more through Move More Pack in comparison to standard letter recommendation (OR = 1.91). According to Short, aerobic physical activity presents (OR = 1.73) for a printed workbook for physical activity than standard letter recommendation [33]. There was an improvement in the physical activity of intervention arm (9.58 ± 23.14) in the course of 12 weeks than the

control arm (2.61 ± 24.10). Intervention arm 104 (63.5%) patients improved physical activity than 103 (47.6%) control arm patients. There was a significant correlation between Move More Pack, gender, age and physical activity. Active intervention percentage was maintained from 12th to 24th week with a slight increase from 44.2% – 51%. Mean score of physical activity in the course of 12 – 24 weeks was (35.57 ± 23.71) to (40.84 ± 34.85). Regression analysis failed to find pre-diagnosed physical activity and self-efficacy to be a marker of improvement in physical activity.

Improvement in the physical activity is more in Move More Pack than standard letter recommendation by significant control of gender, age and physical activity which is also supported by Vallance [34, 35]. The difference would have been more significant in case of usual treatment over standard letter recommendation. Short and outcomes are similar about the standard letter recommendation which increases the physical activity by 9.1%; whereas, an increase in the Move More Pack is 36.9% in 12 weeks [36, 37]. It indicates that physical activity can increase with a simple letter but more research work is also suggested for further confirmations. The hypothesis presents that “Move More Pack” increases the proportion of physical activity among cancer survivors in the course of twelve weeks with maintained proportions for a period of twenty-four weeks. Physical activity improvement was hypothesized through self-efficacy and pre-diagnosis of physical activity. Self-efficacy positively increased over the course of 12 weeks from Move More Pack in comparison to standard letter recommendation; however, there was no difference between control and intervention arm groups. Self-efficacy increased from 12 – 24 weeks after receiving Move More Pack. Though the self-efficacy improvements are trivial and secondary in nature. This

research is not planned to explore such small-scale enhancements.

Similar outcomes are observed for HRQoL having a positive trend of standard letter recommendation and Move More Pack; whereas, within groups, differences were not significant. Vallance reported improved HRQoL (1.4%) for a standard recommendation in comparison to the physical activity improvement (5.8%) from print-based internet assisted tools [38]. Our research reported comparable HRQoL improvements for those who received 5.6% Move More Pack; however, surprisingly, improvement in HRQoL was 7.1% for standard letter recommendation over 12 weeks. Per person cost for Move, More Pack was (£8.19) which 8.6 times more in comparison to the cost of standard letter recommendation (£0.95).

CONCLUSION:

Physical activity is significantly increased through Move More Pack than standard letter recommendation at 12 weeks but not HRQoL or self-efficacy. Baseline self-efficacy and levels of pre-diagnosis physical activity do not highlight the improvement in the physical activity from using Move More Pack. Print-based intervention with internet tools support is a low-cost approach to improve physical activity among survivors of cancer.

REFERENCES: