Uptake and drop-out from a corporate health-promotion programme for employees with health risks

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ABSTRACT

This study was: to offer a group of at-risk employees individualised fitness programmes; to assess their occupational imbalance and alienation, and to monitor engagement in the programme in the context of the Model of Human Occupation. Participants were offered a physical assessment, an individualised fitness programme, health risk and life balance questionnaires, personalised feedback and a metabolic assessment. Uptake, drop-out and retention were measured, and profiles of participants in the latter two categories were analysed.

Of 122 employees with previously-identified health risks, 52% declined to participate, 20% dropped out and 23% completed the six month programme. The drop-outs constituted a higher-risk sub-group which potentially has significant implications for the company's productivity. Identification of health risks should be supplemented by active intervention in terms of support for participants who are ready for change and assessment of personal causation, interests, values, roles and habits, for those who fail to respond or who respond but drop out.

Key words: Health Risks, Model of Human Occupation, Retention and drop out, Health promotion programme

Introduction

The presently accepted definition of health is broader than just the absence of disease and follows the concept expressed in the Ottawa Charter[1] stated by Epp in 1986[2]

"health is created and lived by people in the setting of their everyday life, where they learn, work , play, and love. Health is created by caring for oneself and others, by being able to take decisions and have control over one's life circumstances."

The Charter further defines health promotion as a process which enables people to improve their health and increase control over their lives by enhancing personal and social development through providing education, attitude change and opportunities to develop life skills. It should result in a healthy life-style and well-being of the individual[3].

The relationship between occupation, health and wellness has long been recognised[4], with recent research concluding that this relationship is strong, but not causal in nature[3]. A recent re-assessment of the value of occupation as an agent of health and well-being has shown that physiological imbalance and ill health are the consequences of stress and coping with everyday life. Both have been closely linked to how one engages in occupation[4]. Occupational structures within the post-industrial environment may no longer provide opportunities for " *health enhancing, balanced, yet stimulating use of capacities, because occupational value in post-*

industrial cultures .... usually centers around paid employment"[4]. The present massive and rapid changes occurring in employment and technology not only limit the opportunity to divide time equitably between physical, social and mental activities (with physical activity being largely unnecessary in the work place), but also causes occupational alienation.

The Ottawa Charter states that health concerns, associated with socio-ecological change, require a *"systematic assessment of the health impact of a rapidly changing environment, particularly in areas of technology, work, energy production, and urbanisation"*[1]. Such an assessment would need to take into account the concept of alienation, which is associated with unsatisfactory occupation as a result of lack of choice and interest in the job, and exposure to unnatural environments, leading to dissatisfaction and reduced quality of life[4]. This applies in South Africa since, with democratisation in 1994 and the re-entry into international markets, the country has emerged as an African leader. Aggressive growth and development programmes and targets continue to be set, with past targets averaging an impressive 3.5% per annum[5]. This rapid growth and development are set against the backdrop of significant national health and wellness risks because employment, environmental - and lifestyle changes allow a biological adaptation only up to a point, often resulting in the development or aggravation of chronic diseases[4]. This is further impacted by environmental concerns e.g. with security[6], and increased opportunities for sedentary leisure and socialising which reduce the need to engage in any substantial and sustained physical exercise[4]. The consequence of the above is frequently an imbalance between diet and activity, which may contribute to health disorders including cardiovascular disease, obesity and the metabolic syndrome[7]. Ongoing unresolved stress from occupational imbalance and alienation is also related to anxiety, burnout, boredom, depression and substance abuse[4]. Even with the advent of legislation to control the use of legal substances, smoking rates in South Africa remain high, and alcohol abuse is widespread[8,9]. These occupational and environmental factors have a significant impact on presenteeism (workers being on the job, but because of medical or other conditions or situations are not fully functional)[10], while chronic conditions such as obesity and diabetes impact significantly on both absenteeism and presenteeism[11].

Faced with the challenges of competing in global markets, while simultaneously dealing with a range of factors that are detrimental to the health of the workforce, employers are increasingly turning to workplace health assessments, 'wellness days', and preventive and promotive health programmes in the interests of efficiency and productivity. Such services are being offered by a variety of providers, ranging from in-house occupational health nurses to external risk management organisations. Occupational therapists, with their specialised knowledge of occupation and the impact of engagement in occupation on health and wellness, are ideally placed to contribute meaningfully to this growth industry, and their role in facilitating health promoting activities should be advanced.

Experience in health and productivity management has found that the best results are achieved with specific programmes that have been developed to maximise health and wellness in the workplace, target health issues, are tailored to individual needs, are evaluated rigorously and, on completion, are communicated back to key stakeholders[12]. The client-centred approach, with individualisation of risk reduction for high risk employees, has been emphasised as the critical element of workplace interventions[13]. Adoption of and adherence to a wellness and health promotion programme can be guided by the use of Kielhofner's Model of Human Occupation[14]. This involves consideration of the volitional subsystem, which includes personal causation (knowledge of one's capacity and sense of efficiency, or the perception of control over one's own behaviour and its outcomes), interests and values (personal convictions and sense of obligation), as well as the roles and habits of individuals in the habituation subsystem. The environment in which individuals function must also be taken into account, noting in particular, the choices they make to engage in a particular occupation.

The purpose of this study was to determine and analyse the factors influencing the uptake of a health promotion package that was offered to at-risk employees in a technological corporate environment, where work is predominantly done at computer workstations. Risk had previously been identified and was comprised of a range of existing and potential health- and lifestyle-related disorders. Given the range of professional skills available in the School of Health Sciences (which includes departments of occupational therapy and exercise science and sports medicine), it was considered appropriate for this School to develop and offer a programme of individualised physical fitness to employees involved in sedentary work because as little as 1% of energy the body produces may be needed for this type of work[4].

The objectives of the study included establishing

- the effect of individualised fitness programmes (either in-house or external) and nutritional advice in addressing the participants' occupational imbalance and alienation,
- participants' ongoing health risks by evaluating energy expenditure, body mass indices, satisfaction in Life Balance scores and absence from work,
- the drop-out rate from the fitness programme, and comparing the individuals who dropped out against those who did not,
- the adherence to the wellness and the health promotion, readiness for change, and engagement in occupations which promote the health of those who dropped out and those who did not[14].

Methods

The corporate entity approached for the study is a major player in the health maintenance and insurance business. It has a staff complement of around 3500 employees, who because of the service nature of the organisation, all have sedentary, computer-based jobs. The company, located in a number of sites which were easily accessible to the researchers, bases much of its product offering on personal fitness and preventive health interventions, and extends this philosophy into the organisation, offering employees an in-house health and wellness assessment. This assessment is questionnaire-based and assigns a risk score derived from anthropometric data, health status, lifestyle factors, exposure to stress, leave and other work absences, and a history of personal or family medical conditions. Results of the most recent set of assessments were provided, and a subset of 122 individuals was selected from the 621 records in the data set. The 122 potential participants all had two or more health risk factors, were located in corporate facilities with easy access to the well-equipped, state-of-the-art, in-house gym, and were members of the company's medical aid scheme.

For this study, the company assigned a liaison officer to facilitate personal and electronic communication with participants, and through her the 122 identified individuals were invited to enrol in a six-month programme that would involve physical assessments, free access to the in-house gym, individualised fitness routines, nutritional advice, and feedback on completion of a series of electronic questionnaires to be completed during the programme. They were offered no incentives to participate.

The physical assessments were performed by the study biokineticist (YC) who was assisted throughout by the qualified biokineticist attached to the in-house gym. Each assessment involved measurement of height, weight, body mass index (calculated using the Bray formulae[15]), skinfold thickness (Jackson and Pollock method[16]), blood pressure, random (non-fasting) glucose and cholesterol testing, and physical working capacity (assessed on a bicycle ergometer[17]). Participants were also invited to provide additional data on their occupational imbalance for physical activity by wearing a SenseWear® armband for a number of days. This armband directly measures skin temperature, heat flux, galvanic skin response, and acceleration around a number of axes. The internal software calculates total daily caloric expenditure, duration and intensity of physical activity, Kcal/Kg/hour, active energy expenditure, number of steps per day, body position (standing, sitting, supine), and sleep efficiency and duration. The device has been thoroughly tested and validated against conventional measures[18].

Other occupational performance and quality of life measures which considered occupational imbalance and alienation were obtained from electronic questionnaires which have been field-tested by HealthInSite, an established South African organisation that provides internet-based health and wellness services to >100 local and overseas companies. Two electronic questionnaires were deployed via e-mail, the HealthQ® and Life Balance® assessments. The HealthQ has 48 questions that cover the same areas as the in-house questionnaire already described, but yields more medical information, assesses stress and coping mechanisms to a greater extent, touches on quality of life issues, and explores readiness for lifestyle and/or behaviour change. Based on the health profiles generated by the HealthQ assessment, each week HealthInSite sent individualised health-promotional Healthbytes® to all participants via email. This service utilises technology in order to mass-personalise wellbeing communications, thus creating cost effective and risk-appropriate intervention. The Life Balance questionnaire that was deployed explores participants' personal causation, interests, roles and habits by rating of importance of factors such as job satisfaction, family life, social engagement, exercise, finances and diet, and also rates their values by asking participants to rate how much they are doing towards achieving their goals in each of these areas. At the end of the study period the participants' history of leave taken during the period of study and the preceding year was provided by the company's Human Resources department.

Statistical analysis was by comparison of means (parametric or non-parametric, depending on distribution of data) and by analysis of variance. Individuals signed consent to participate in the research, and the study was approved by the institutional Human Research Ethics Committee.

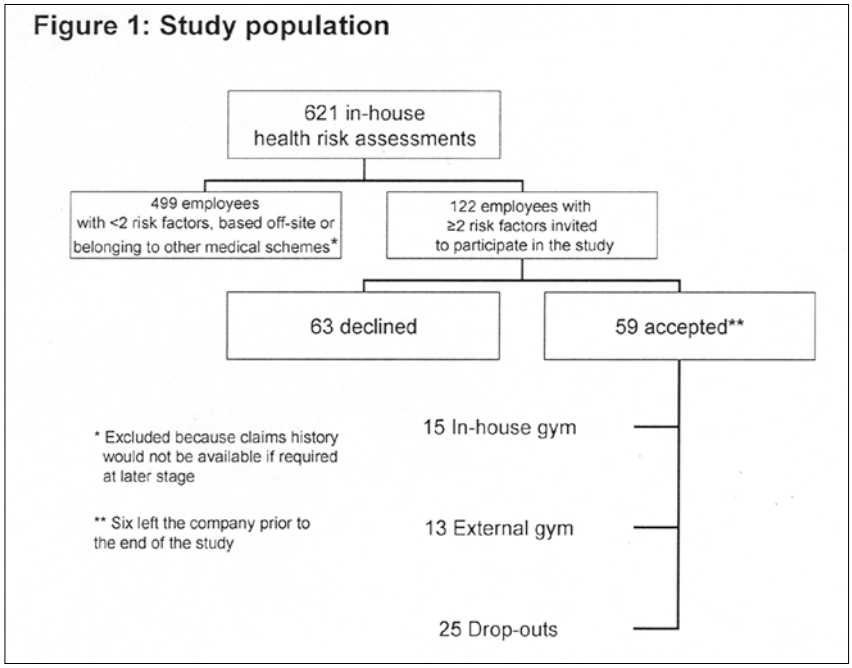

Figure 1: Fate of enrolees during the six month period

Results

All 122 participants who were eligible for the study were contacted telephonically and by e-mail by the company's project liaison officer, and offered the opportunity to participate in the six month study. They were made aware of the need for change by drawing their attention to the fact that they had been identified on the basis of the in-house risk assessment, and that as participants they would have the benefits of access to the in-house gym, an individualised programme, and reinforcement in terms of professional feedback during the programme. Sixty-three (52%) of the 122 declined the invitation. While some might have declined because they were dealing with their risk/s outside of the workplace, others either did not fully appreciate their health risks or were not ready for change[19]. Readiness for change, a key element of this study, can be ascribed to volitional and personal causation factors which direct a person's choice to engage in activity, and is dependent on awareness of self and future possibilities. This is the main group to be targeted by occupational therapy in relation to awareness and their attitudes and beliefs according to the health belief model[20]. This includes both group work and individual sessions reviewing with them their perceived susceptibility to the health risks described, perceived severity of their present health status and the perceived benefits of the programme. The principal aim would be to improve both intellectual and physiological insight into preventive health behaviours[20].

The other 59 participants, who had moved to a stage of adopting change, completed the consent forms and presented for the physical assessments. Six of these participants left the organisation before follow up. *Figure 1* summarises the eventual distribution of the 53 participants who were available for follow-up for the full six month duration of the study. The largest participating sub-group (25) consisted of employees who had expressed an interest in the study but dropped out of the gym component within the first 2-3 months. It would appear that while these participants had reached the action stage in changing their lives, they could not complete the maintenance step[14,19]. Interest and values were likely not influenced in these participants to the stage where role internalisation and habit formation could be developed. Groupwork by the occupational therapist in relation to perceived barriers, both psychological and physical, as well as improvement of self efficacy, and supported development of the habituation subsystem needs to be implemented.

Fifteen participants stayed the course and continued with the in-house gym and adherence to the personal programme planned by the biokineticist. The majority of these participants (71%) were 'gym-naïve' or had sporadically enrolled in gym programmes prior to the study. They had not identified an interest, developed values or self-generated an action plan, but when this was provided for them they established and maintained roles and new habits in relation to physical exercise. The final sub-group of 13 participants who presented for the physical assessment but then continued with their exercise programmes at external gyms, were mostly 'gym-experienced' (87%) with prior, fairly regular gym attendance. These participants had already initiated self-directed change and had already developed the values, interests, roles and habits necessary to embed this occupation into their lives.

Figure 2 details the components of the study undertaken by the 53 participants whose data were available for analysis after six months, and the table shows the results of the various components assessed. No data were available for the 63 eligible participants who declined the invitation to participate. This was largely due to the redeployment of the company's project liaison officer within the organisation, and her replacement by another who unfortunately did not have sufficient time for the study and consequently found it difficult to facilitate access to the non-participants. However, the data for the 53 who completed the six month study show some significant differences between the sub-groups, and also display some interesting trends.

As shown in *Table 1*, while the three sub-groups were similar in terms of age, gender and risk scores, as assessed by the company's in-house instrument, analysis of variance showed that those who dropped-out were significantly different from each of the other sub-groups, while the two gym-attending sub-groups who reached the stage of maintaining a change in their lives were statistically similar (drop-outs vs internal gym sub-group $p=0.015$; drop-outs vs external gym sub-group $p=0.007$; internal vs external gym sub-group $p=0.12$).

There was an indication that the HealthInSite (HIS) health risk score is a more sensitive determinant of risk than the in-house assessment offered by the employer. The mean in-house risk scores were 4.2, 4.1, and 4.5 for drop-outs, internal gym and external gym

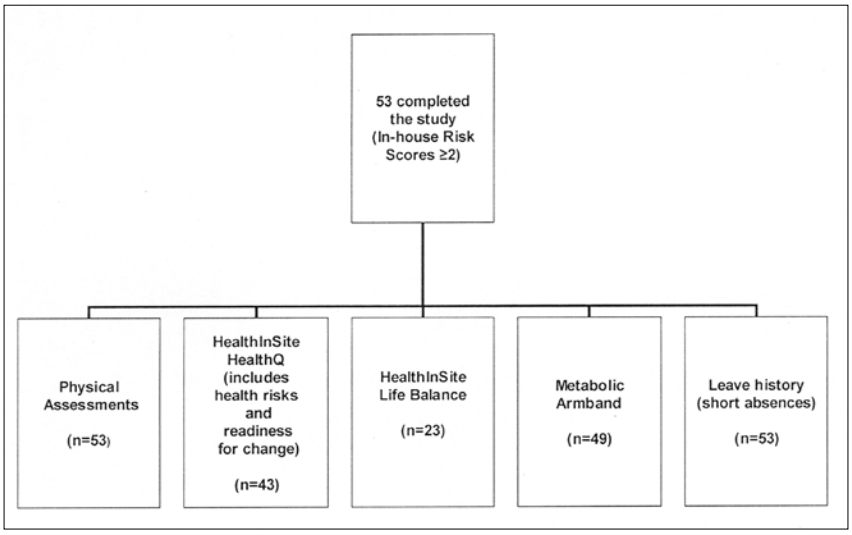

Figure 2: Components of study completed

sub-groups respectively, while the mean HIS scores ranged from 22.7 for the drop-outs to 17.3 for the external gym sub-group. On the basis of this score the drop-outs were identified as being at greater risk than the other two sub-groups, while simultaneously showing less readiness for change (mean score of 17.7 vs means of ±19 for the two gym sub-groups) and less dissatisfaction or occupational alienation on their Life Balance scores than the other sub-groups with a mean score of -46.5. The drop-outs also showed themselves to have occupational imbalance in that they expended significantly less energy (difference between the sub-groups was significant at p=0.009) and had significantly higher body mass indices and percentage body fat (differences of p=0.05 and 0.04 respectively). They also spent more time lying down per day, and had almost double the number of short absences (≤ 2 days vacation leave or short periods of sick leave). In summary, the drop-outs represented a higher-risk sub-group, with greater personal health risks as well as current and future productivity risks for the organisation.

The participants who attended external gyms had, mostly, already made a self-directed commitment to an active lifestyle; they had fewer health risks (mean HIS score of 17.3), but nevertheless perceived their occupation to be alienated and showed the highest levels of dissatisfaction in terms of balancing their interest in areas such as diet, exercise, family commitments etc with their ability to achieve their goals (mean score of -55.2 vs in house gym sub-group scores of -48.0). The internal gym sub-group included overweight participants (mean BMI of 31.4) who had fairly high risk scores (mean 20.5) but had the self-awareness and interest required for change, and with the support offered were able to move to the action stage[19]. They developed the values, roles and habits necessary to mobilise themselves in order to mitigate their risk. Of note here is that their short absences from work were similar to those of the external gym attendees and ±50% of the average days taken by those who dropped out of the study.

Discussion

In today's world, providing employee benefits involves much more than simply offering financial protection against illness and/or injury, and employers are increasingly aware of the need to manage their health investment strategically[21]. Both absenteeism and presenteeism contribute to productivity loss, which in a recent study was calculated as being 12.8% for absenteeism and as much as 19.0% for presenteeism in individuals with moderate to high risk scores[10]. Other studies have shown a ±2% productivity loss for each health risk factor affecting employees, with a commensurate productivity gain when employees were able to reduce the health risks[22,23]. Several studies have concluded that health risk reduction within organisations is dependent upon integration of health and productivity management programmes into the organisation's operations while simultaneously addressing personal, environmental, policy and cultural factors affecting health and productivity[12,13]. Health risk screening alone is significantly less effective than a structured corporate health promotion programme[24], but the combination of screening and then targeting the at-risk population appears to be an even more successful strategy[25]. The factors affecting an individual's engagement in occupation must be taken into consideration in the provision of a health promotion programme. Offering an on-site physical fitness facility on its own will not be successful if the programme does not accommodate the stage of change the employees have reached, or their volition[14], even within a supportive organisational culture of health promotion[26].

For this study, we engaged with an organisation that met almost all of the optimal criteria to provide the awareness and support needed to change behaviour and lifestyle: a brand identi-

	Drop-outs (n=25)	Internal Gym (n=15)	External Gyms (n=13)	
Age (yrs)	32±6	33±5	29±3	
Gender (% Female)	68	73	69	
In-house Risk Score	4.2±1.2	4.1±1.1	4.5±1.3	
HealthInSite (HIS) Surveys:				
HIS Risk Score	22.7±6.9	20.5±9.6	17.3±7.7	
HIS Readiness for Change	17.7±3.9	19.1±3.3	19.4±2.6	
HIS Value Rating	70.8±7.5	71.1±8.2	71.0±7.5	
HIS Satisfaction Rating	-46.5±13.5	-48.0±15.9	-55.2±14.1	
METS (Kcal/Kg/hour)**	1.23±0.3	1.40±0.3	1.56±0.3	p=0.009*
% Body Fat	30.2±8.7	27.4±7.9	22.0±6.7	p=0.05*
Body Mass Index (BMI)	31.4±6.9	29.1±6.5	24.6±5.8	p=0.04*
Lying (minutes/day)***	415±68	366±121	369±50	
Days Off (2006/7)**	15.2±11.1	8.7±7.8	9.5±13.1	

Characteristics of groups:
Drop-outs vs Internal Gym sub-group: p = 0.015; 95% CI 0.25-2.25
Drop-outs vs External Gyms sub-group: p = 0.007; 95% CI 0.56-6.8
Internal vs External Gym sub-groups: p = 0.12; 95% CI -0.4-3.05

* Significance accounted for by the difference between the drop-outs and the other two groups

** SenseWear® measures *** Leave data from Human Resources Department

Table 1: Mean values for results obtained from sub-groups

fied with fitness and personal responsibility for health, internalisation of the products sold to the client, in-house health screening with access to support structures, an in-house fitness facility staffed by a biokineticist, and an internal champion who was enthusiastic about adding the components offered by our team of health professionals. Perhaps the first, and an extremely important finding emerging from this project, was that recruiting and motivating employees, directing change, and maintaining commitment to that change is heavily dependent on the internal champion. This project became more difficult when staff rearrangements resulted in the replacement of the original internal champion. Unfortunately the substitute, while definitely committed to the project, frequently found that it clashed with her corporate responsibilities and limited her time for engagement. This limitation aside, and in spite of the relatively small number of participants involved, the project yielded information that is important for individual participants, for the organisation, and for health professionals involved in corporate wellness and productivity programmes.

The environmental support resulted in more than the usual 20-30% of employees, who are already concerned about their health, participating in the study[27], with only 51.2% of employees who had voluntarily participated in an in-house health risk assessment and been found to harbour several risk factors choosing not to participate in the study at all. These employees still require follow up by the company to establish the extent to which the in-house health risk assessments had been acted upon. Having made individuals aware of the need for change, personal causation, interests, value systems and defences against change must be addressed. Within the group of non-responders, individual or group therapy or counseling might be needed to assist the employees in changing their 'health belief' before they are able to consider change as a realistic option.

The next significant finding was that almost half of the group that signed up for the six month intervention dropped out after the first or second month, bringing the number who adhered to the health promotion programme in line with findings from other studies[27]. These participants were clearly at risk from both personal and corporate perspectives. The health assessment instruments indicate that they have more risk factors, are less ready for change and are less dissatisfied with the imbalance between their lifestyles and their goals. Physically these participants were overweight, expended less energy, and had almost twice as many short absences from work or days taken as sick leave. This has to be a highly significant result for the company, not only in terms of its general commitment to health, wellness, and incentives and rewards for healthy lifestyles, but also because of the implications for productivity. It would appear that within this sub-group, perception of the imbalance and alienation in their occupation was such that it did not necessitate the need for change even though the employees were aware of their physical health risk factors. Thus for these participants, who (perhaps misguidedly) felt more satisfied with life and more in control of their behaviour, the interest in continued engagement in occupation to promote physical health was not as valued. Interventions other than those offered in this programme must be considered if alteration to their value systems, habit development and roles are to be achieved, This should include constant feedback and rewards acknowledging their success at each step of the process[19].

On the positive side, the number of participants who took advantage of the opportunity to access the in-house gym and resident expertise indicate that for those who had reached the stage where they perceived and valued the need for change, the programme offered was highly successful. Participants in this latter sub-group had moderate-to-high health risk scores and were overweight, but according to the HealthInSite assessments were motivated and ready for change. They tended to differ from the lower risk, slimmer and highly motivated sub-group that made use of external gyms. Participants in this sub-group had also benefited from the support and personal attention of the resident biokineticist who assisted them by consolidating values in terms of health promoting physical activity, habit formation and role change, that participants were not able to initiate themselves. The intervention provided by the biokineticist alone is adequate for this group.

Conclusion

In-house health risk identification amongst employees is relatively meaningless unless supplemented by active and ongoing health promotion and intervention. Highly-motivated self-starters can probably be left to mitigate risk independently, while there appears to be an important sub-group that appreciates and benefits from an in-house facility that offers personalised programmes for risk reduction which can be managed successfully by a biokineticist.

Failure to support either those who fail to respond to a risk alert, or who respond but fall by the wayside, has implications for current and future productivity. The role of occupational therapy at this level needs to be further investigated.

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