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REMOTE COMMUNITIES: PROMOTING ENGAGEMENT IN SELF-CARE

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ABSTRACT

Behaviour change interventions which promote engagement in self-care may be utilised as a means to increase the reach of healthcare and reduce health inequality by targeting those populations deemed harder to reach. The remote and rural community and offshore workforce in the United Kingdom may be regarded as hard to reach and accordingly, may benefit from implementation of a self-care behaviour change intervention. Such interventions may foster resilience and wellbeing within these communities, and increase quality of life. However, traditional face-to-face methods of delivery may prove challenging to implement within remote communities. Accordingly, digital means of delivery may proffer a unique opportunity to engage those that are harder to reach. In addition, digital interventions may assist in overcoming some of the barriers that are typically associated with face-to-face methods. For example, they may assist in reducing the stigma that is often associated with seeking help. Strategies such as self-monitoring, whereby an individual monitors their own health data, may prove beneficial in promoting self-care. It is advocated, in an effort to best ensure sustained behaviour change, that digital interventions are developed in accordance with theory. The use of theory enables intervention developers to match determinants of behaviour to intervention content. Such mapping is proposed to increase the effectiveness of interventions.

INTRODUCTION

It is proposed that active engagement with self-care, defined by the World Health Organisation[1] as '*the ability of individuals, families and communities to promote health, prevent disease, and maintain health and to cope with illness and disability with or without the support of a health-care provider*', will better equip individuals to maintain their health and effectively manage long term health conditions[2]. Programmes and interventions developed to support individual's to change their health behaviour and promote engagement in self-care are becoming increasingly popular[3].

For example, the Expert Patient programme, which provided individuals with support and tools to manage their long term health conditions, has demonstrated effectiveness across a range of health outcomes e.g. increasing confidence in ability to self-manage conditions[4]. It has been speculated that behaviour change interventions may be used as a means to reduce those health inequalities associated with reduced life expectancy and quality of life[5]. Thus, behaviour change interventions may be used to increase the reach of healthcare and reduce health inequality by targeting populations deemed harder to reach.

'Unreached' groups experience greater health inequality since they are less likely to initiate contact with healthcare services or solicit advice from health professionals[6,7]. Unreached populations may be reluctant to access healthcare services for a number of reasons. For example individuals may experience difficulty in accessing healthcare due to the remoteness of geographical locations in which they live and/or work[8]. The International Labour Organisation[9] report that health inequality within remote and rural areas is high, and over half of those living in such locations may be deprived of access to critical healthcare.

THE PROBLEM AND POPULATIONS CONCERNED

Within the United Kingdom, a pertinent example of the health-related challenges facing remote and rural populations is Scotland since approximately one fifth of the population reside in remote and rural areas[10]. Whilst the overall life expectancy of those living in rural areas within Scotland is higher than the national average for urban areas, there is a higher incidence of suicide and alcohol-related illness[8].

Accessibility to services is often poor due to the considerable distance that individuals may have to travel to solicit advice or receive treatment. For example, a cross-sectional cohort study by Rushworth *et al* to determine access to medicines in remote and rural areas in the Scotland, reported that almost a fifth of those aged 80 years and over did not believe that they could collect their medicines from a source convenient to them[11].

The '*Delivering for Remote and Rural Healthcare*' document, published by the Scottish Government[8], highlights the Building Blocks of the Extended Community Care Model and stresses the importance of promoting engagement with self-care within the Scottish remote and rural population. The Remote and Rural Steering Group advise that self care promotion '*…should begin at an early age and focus upon health promotion and patient empowerment through information provision*'[8].

Engagement with self-care may somewhat ameliorate the burden on healthcare professionals working in isolation within remote and rural settings. Further, the report '*Pulling together: transforming urgent care for the people of Scotland*'[12] advises that increasing resilience and engagement with self-care may aid in reducing the occurrence of critical incidents and thereby, the subsequent demand on health services and professionals.

In addition to those who live or work in remote and rural communities onshore, it is important to

also take into consideration the health and social-care needs of those individuals who live and work in remote communities offshore. For over 30 years, the Oil and Gas Industry (OGI) has provided a significant source of employment within Scotland, with a recent estimate by the Oil and Gas UK (OGUK) placing UK Continental Shelf (UKCS) employment at around 400,000. Of this figure, the total offshore workforce is estimated to be 64,000 with a core workforce (i.e., those working over 100 nights a year offshore) of 29,000, representing 45% of the total offshore workforce[13].

As a vital contributor to the global economy and a key source of employment within Scotland, the OGI is largely dependent on a core workforce who commit themselves to a unique and arduous working lifestyle. Described as '*…among the harshest and most stressful working environments in the world*', offshore work is typically labour-intensive[14]. In the UK Continental Shelf, workers are required to travel via helicopter to oil installations and vessels located throughout the North Sea. The majority of the workforce work 12 hours per day for a period of approximately 14-21 days. Sustained working periods, allied to the intrinsic demands and hazards of offshore work, may place a significant physical and psychological burden on workers[15].

Offshore installations and vessels are typically located in remote geographical locations thereby impeding access to medical services. Typically, minor ailments and injuries are treated on-board by a qualified medical professional in a sick bay. Due to space constraints, medical facilities and supplies may be limited. Consequently, some medical issues may require additional assistance or treatment from onshore healthcare services. In the event of medical emergencies, medical evacuation via helicopter may be deemed necessary, which can be costly and potentially dangerous due to frequently adverse weather conditions. Delay in reaching the individual, may impact adversely on treatment and subsequent health and wellbeing outcomes[16].

According to a report published by the International Association of Oil and Gas Producers, an unhealthy offshore workforce will incur higher rates of absenteeism, and will increase the likelihood of medical evacuations from an installation[17,18]. Moreover, the paper, '*A Recommended Fitness Standard for the Oil and Gas Industry*', advises that improving the health and wellbeing of employees working within the offshore industry could be a critical determinant in ensuring economic opportunities are maximised and the longevity of the workforce[19].

In an effort to ensure wellness within the workforce, personnel operating in the UKCS are required to undertake an initial medical screening prior to securing employment within the industry and thereafter, every two years to maintain their certification[20]. This may serve to mitigate particular health issues within the workforce, and as a consequence it is often assumed that offshore personnel are fit and healthy, however the literature suggests that this may be an inaccurate perception. For example, a narrative review seeking to synthesise the literature on offshore workers' health and wellbeing identified concerns over a number of domains. The outcomes of the review highlighted the limitations of the research on offshore health and stressed the importance of conducting further cross-sectional research within the offshore workforce[21].

Accordingly, Gibson Smith *et al*[22] conducted a survey to determine offshore workers' health status and engagement with self-care, the results of which highlighted key health issues within this population. Key health issues included; smoking; hazardous alcohol use; poor medication adherence; insomnia; and overweight/obesity. Moreover, this unique survey provided evidence to support the potential benefits of implementing behaviour change intervention(s) which promote engagement with self-care.

As highlighted by the exemplars provided above, the promotion of self-care within unreached populations in Scotland could be of significant benefit in empowering individuals and equipping them with the skill base to manage, and maintain their own health. However, it is also important to recognize the key challenges that may serve as barriers to effective implementation of an intervention which promotes self-care within remote populations. For example, traditional face-to-face methods may not be conducive to remote and rural environments and may not be helpful in reducing the stigma associated with seeking assistance for mental health-related issues amongst certain social and occupational groups[23], including offshore workers[24]. Accordingly, there has been an increasing focus on the development of methods which optimise accessibility to those who are typically unreached by traditional intervention methods.

MECHANISMS THAT MAY BE USED TO ENGAGE REMOTE POPULATIONS

Due to worldwide increases in internet usage and smartphone ownership, digital strategies are proving increasingly popular as a means to deliver and support healthcare within unreached and remote populations[25]. The Department of Health in the United Kingdom, advises that '*…faced with increasing demands on healthcare systems, driven by higher expectations of their citizens, the rising burden of the long-term management of non-communicable diseases and ageing populations in need of care, many healthcare providers see that digital health offers a fresh approach to delivering healthcare*'[26].

Digital interventions may be delivered via multiple platforms but are commonly administered across the internet or through smartphone applications. Both methods enable individuals to gain direct access to a range of online sources and thus, digital strategies may be used as a consultation tool to educate and inform users on health and medical issues. Additionally, they may be used by individuals to self-monitor, and track aspects of both their physical (e.g. blood pressure, daily steps, heart rate) and mental health (e.g. happiness)[27].

The phenomenon of using digital technologies to monitor health information has been termed the 'quantified self' and refers to '*…the regular collection of any data that can be measured about the self such as biological, physical, behavioral or environmental information*'[28]. Self monitoring is often a key strategy employed by experts to initiate behaviour change, and is a core concept of self-care. For example, in the management of diabetes, self-monitoring of blood glucose levels is critical to effective self-care. Digital self-monitoring may offer a means for those who are digitally engaged to self-care[29].

Interventions which are delivered via the internet or smartphone may offer a unique means to promote self-care amongst digitally engaged unreached populations[30,31]. Through inherently

personal delivery, digital methods may afford users confidentiality[32] and could ameliorate issues often associated with accessing healthcare by reducing physical (e.g. remote location)[33] and emotional barriers (e.g. stigmatisation)[23]. Accessibility may be further increased since a behaviour change intervention could be administered to anyone with a smartphone or who is able to connect to the internet[33].

Further, due to the reduced burden on practitioners who are often required to deliver interventions, and relative decrease in demand on physical resources normally associated with face-to-face methods, digital interventions are comparatively low cost. Consequently, digital interventions may be rolled out on a much larger scale than face-to-face methods given the same budget constraints[31-33]. Moreover, digital interventions are available to users around the clock and delivery is not constrained to a specified time period, as it would be if an intervention was delivered using face-to-face methods. Accessibility to the intervention would increase further as a direct consequence of ease of access. Increased accessibility, and 24-hour availability, may offer intervention developers with a means to ensure that the health behaviour change is sustained over the long term[32,33].

Given the potential for optimising accessibility, availability and the ever-expanding culture of digitalisation, digital interventions may provide a sustainable means to promote self-care within unreached populations. They may offer an opportunity to maximise effectiveness in terms of capturing unreached target populations and have demonstrated success in influencing behaviour change across a number of health outcomes in relation to self-care. For example, there have been a number of smartphone applications developed which support self-care and adherence to treatment regimes in patients with chronic health conditions[32].

A THEORY-BASED APPROACH TO INTERVENTION DEVELOPMENT

It has been proposed that the use of behaviour change theory may strengthen the evidence base of interventions and provide a starting point from which to achieve sustainable health behaviour-change. Guidance from the Medical Research Council on developing complex interventions has provided further support on the use of theory by highlighting the importance of using behaviour-change theory to underpin intervention development[34]. Integration of theory is critical in ensuring robustness in research since it permits determinants of behaviour to be reliably mapped, and intervention content to be tailored accordingly.

Consequently, the use of theory to assist development and evaluate intervention effectiveness is strongly advised. Webb *et al* concluded, after systematically reviewing the literature on internet-based health behaviour change interventions, that interventions grounded in theory were associated with greater effectiveness in terms of achieving behaviour-change[35]. Integration of theory into digital intervention design was also supported in a review of web-based interventions for behaviour-change and self-management carried out by Murray[31]. Thus digital interventions may benefit from establishing a clear theoretical underpinning from the outset, and using theory to guide the development process.

Moreover, utilisation of behaviour-change theory would ensure that the mechanisms relating to any observed change in behaviour could be identified and satisfactorily evaluated. Additionally,

the publication by Webb *et al* reviewed the use of behaviour change techniques (BCTs) in internet interventions. BCTs are regarded as the 'active ingredients' of interventions since they enable intervention developers to facilitate change via key mechanisms. The findings suggest that interventions using multiple BCTs were more likely to affect behaviour change than those that focus on one BCT[35].

Free *et al*, in their review of controlled trials of health behaviour change smartphone applications, advise that there may be an inherent weakness in the design of some programmes specifically in relation to the use of behaviour-change theory to underpin design[36]. Their findings suggest that there was a large variation in the use of theory to underpin the design of smartphone applications; with only 7 out of 26 studies explicit about the theory underpinning the design. However, the median number of BCTs used was 6 endorsing the extent to which studies were using multiple strategies in an effort to facilitate behaviour-change. The review highlights the relative underuse of theory within digital interventions which are developed to target health-related behaviour-change.

However, as discussed by Stewart and Klein, there are a number of complexities in embedding theory into research[37]. They advise '*…the application of theory in research can be confusing, with a multitude of terms and definitions, and many approaches described*'. In an effort to make theory more accessible to those outwith the psychology disciplines, a panel of behaviour-change experts have developed the Theoretical Domains Framework (TDF) which aims to synthesise behaviour-change theory into one framework. The TDF is in its second iteration, and the number of domains included has increased from 12 to 14[38].

Michie, Atkins and West[39] advise that the Behaviour Change Taxonomy Version 1, a consultative tool which has synthesised 93 BCTs into 16 categories, may be used to match domains with appropriate BCTs. It is anticipated that by identifying the theoretical basis of barriers and facilitators, intervention developers will be able to target interventions in relation to these, consequently creating a strong evidence-base rooted in theory. Use of the TDF may enable researchers to approach intervention design systematically since it promotes simultaneous consideration of a number of domains which influence behaviour and permits matching to relevant BCTs.

SUMMARY AND CONCLUSION

As evidenced, the delivery of self-care behaviour-change interventions could be of significant benefit to remote and rural populations in terms of reducing the health inequalities often experienced by such communities. Whilst the aforementioned example was specific to Scotland, the issue of accessibility to healthcare is a global problem and thus, implementation of interventions which promote engagement with self-care may be pertinent to the wider international community.

Widespread engagement with self-care is a key focus of preventive healthcare models and behaviour-change interventions which focus on empowering individuals to take ownership of their health may help in achieving this. Although health behaviour-change interventions have typically demonstrated effectiveness in achieving positive change, they often fail to capture the unreached such as those who live and work in remote and rural communities Thus, the effective

implementation of a self-care intervention(s) may provide benefit in terms of increasing quality of life, resilience and longevity.

It is proposed that participation in self-care interventions within these unreached groups may be best facilitated by using a digital approach to enable delivery. Utilisation of a digital approach may assist in overcoming the physical and mental barriers frequently associated with accessing health services amongst unreached populations. Commonly used strategies include internet and smartphone-based methods. Whilst the methods have proved effective in influencing behaviour-change, there is concern regarding the evidence-base on which they have been developed.

Establishing a strong evidence-base is deemed to be critical in ensuring that these interventions achieve sustainable and long term behaviour-change. It is recommended that interventions are underpinned by behaviour-change theory. The process of matching theory to targets and techniques may provide intervention developers with the means to achieve sustainable health behaviour-change within target populations.

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