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REVIEW

Application of behavioural psychology principles to self-care programmes for people living with leprosy

Sopna Mannan Choudhury[a], Laura Kudrna[a], Bahadir Celiktemur[b] & Richard James Lilford[a]

[a]*Institute of Applied Health Research, College of Medical and Dental Sciences, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK*
[b]*The Leprosy Mission England and Wales, Goldhay Way, Orton Goldhay, Peterborough PE2 5GZ, UK*

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Introduction

To prevent and manage ulcers, people must make changes to successfully engage in self-care practices and adhere to self-care guidelines. Self-care interventions aim to achieve long term behaviour change by instilling a coordinated set of activities—personal care tasks—in the individual's daily life.[1–8] Motivation to engage in such activities can be augmented if the work of facilitators and peer trainers is informed by modern psychological and behavioural theories.

In these guidelines, we employ the Capability, Opportunity, Motivation Behavioural framework (COM-B)[9] to guide those who will design interventions to promote and sustain self-care interventions.[4] We provide a brief summary of the COM-B model, followed by guidance for those who design and deliver self-care interventions on utilising practical behaviour change methods for successful self-care programmes.

The COM-B model

The COM-B system suggests that behaviour change is dependent on the influence and interaction of three factors—capability, opportunity and motivation. The model identifies nine broad categories of things one can do to change the capability, opportunity and/or motivation of a person to engage in a behaviour, and these are referred to as intervention functions. These intervention functions are given in Figure 1.[9]

Correspondence to: Sopna Mannan Choudhury, Institute of Applied Health Research, College of Medical and Dental Sciences, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK
(e-mail: s.m.choudhury.1@bham.ac.uk)

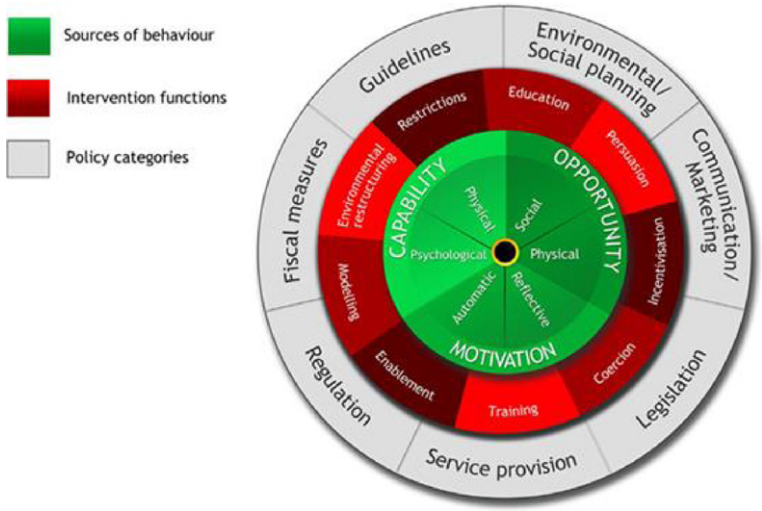

Figure 1. The behaviour change wheel. (Reproduced with permission from Michie *et al.*[9].)

A workshop was held in Nepal involving policy makers and people affected by leprosy, which used COM-B to identiy barriers and facilitators of self care for leprosy. The results are shown in Figure 2, (adapted from Lilford *et al.*[10]).

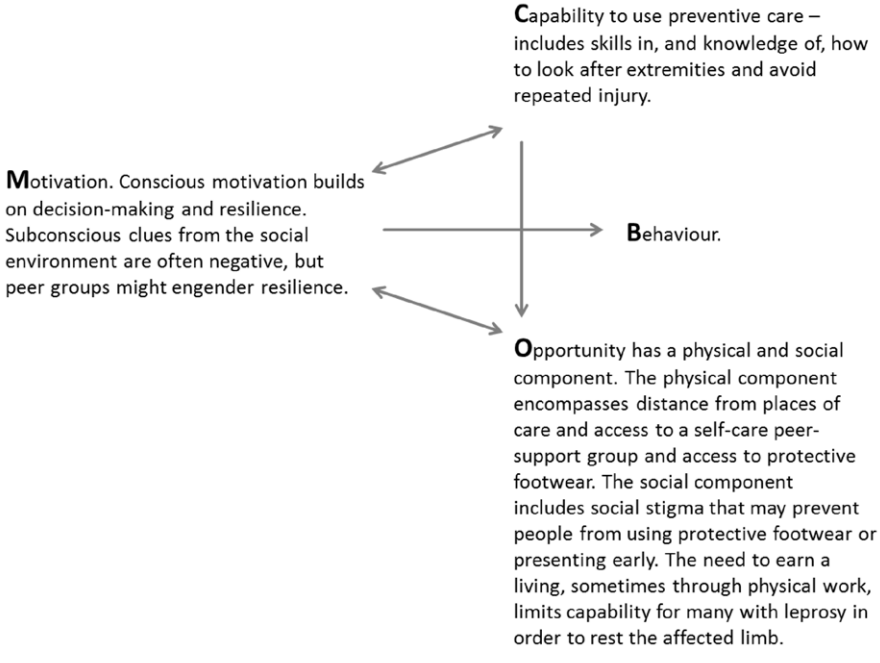

Figure 2. Barriers and facilitators identified during the consultation, mapped onto the COM-B framework.

In the context of leprosy self-care, capability includes understanding the benefits of self-care and having the requisite practical skills for self-care (described in the paper by Darlong[11] in this series). Opportunity includes having the time and money to support self-care. Depending on the context and circumstances of the individual, this can range from having access to clean water to having sufficient time to rest and heal where necessary. Opportunity also involves a supportive family and community environment. Finally, motivation can be understood as the desire to undertake self-care. Much human motivation arises subconsciously, and this is the basis of 'nudge' theory.[12]

CAPABILITY

Education provides information about the potentially beneficial effects of self-care practices (and conversely, the implications of not carrying them out), while training provides people with the skills required to successfully complete those practices and avoid unnecessary risk. Both educational and training interventions have been carried out extensively with leprosy-affected people, by both health care professionals and peers. It is important to recognise that barriers to self-care may arise from limitations to physical capabilities too. For example, it may be difficult to attend to leprosy ulcers due to physical disabilities like vision impairment, limiting the ability to engage in self-care behaviour.

OPPORTUNITY

Leprosy is a disease of poverty and, as such, people affected by leprosy may not have access to the necessary time, tools or conditions (e.g. easy access to running water) to undertake self-care practices. Further, it is not always possible to reduce competing time demands, e.g. the ability to rest and soak limbs rather than earn a living. Working with people to change the context in which behaviour will or will not occur might help promote self-care. Providing resources, ensuring the supply chain for materials, or ensuring that suitable materials are available locally, are all critical in ensuring a successful intervention. Initiatives that reduce stigma and create positive cultures and social norms around self-care draw upon social opportunities to change self-care behaviours.

MOTIVATION

Motivation can be an issue for some people affected by leprosy and may affect a person's functioning. Targeting reflective motivation could involve increasing knowledge about the condition and treatment options, understanding self-care processes, and discussing the benefits of practising self-care. Critical factors in motivating people to self-care are reflective motivation and stigma. The concept of self-efficacy, an individual's belief in their capacity to carry out behaviours and exert control over their own lives, is particularly relevant for people affected by leprosy.[13] Improving self-efficacy should be a key component of many future interventions. Beliefs about the benefits of self-care must outweigh the consequences of not practising it, particularly concerning stigma. Interventions that reduce or avoid the potential for stigma must be adopted.

Alongside reflective motivation, it is important to consider automatic motivation—that is, the idea that what people do is not so much thought about in a conscious and reflective sense; it simply comes about in an unconscious and automatic sense. Automatic motivation includes emotional reactions, desires, impulses, inhibitions, drive states, and reflex responses.[14] For example, whether people choose to select a particular drink depends more on how it is displayed than on any reflective or conscious reasoning about selecting that drink.[15] Similarly, self-care may occur automatically in response to environmental and contextual cues. For example, making a public commitment to engage in self-care in a particular situation may automatically trigger self-care behaviour in that situation.[16,17] The person who provides information about self-care ('the messenger') may be more important for changing behaviour than the message content and wording. Feelings about leprosy, such as whether the condition is perceived in strong affective terms like 'disgust', may automatically influence self-care behaviour too.[18,19]

These behaviours are impacted by many factors that can be encompassed by COM-B. The need to earn a living, for example, by walking miles every day to the field or through physical work, often limits opportunity and presents an environmental barrier for many people living with leprosy. This is reflected in the findings of a study in Ethiopia[2] where people with a higher income were more likely to practice self-care. Further, opportunity entails having the requisite tools and materials to carry out self-care practices. For example, having access to creams and/or dressings for cracks on the skin.[20] Group interactions are a social opportunity factor influencing motivation for many people, but the distance required to travel to the group may prevent or limit opportunities for peer interaction. Social support (e.g. from friends and family) is critical in terms of opportunities to change behaviour, while stigma (including sometimes self-stigma) is demotivating. It is not always possible to reduce competing time demands; for example, it is difficult for farmers to avoid putting weight on vulnerable surfaces of the body at harvest time. Working with people to change the context in which a behaviour will or will not occur, will likely be helpful in promoting self-care. Providing resources, ensuring the supply chain for materials, or making certain that suitable materials are available locally are all critical in ensuring a successful intervention. Motivation can be an issue for some people affected by leprosy and may affect a person's functioning. Targeting motivation could involve increasing knowledge about the condition and treatment options, understanding self-care processes, and discussing the benefits of practising self-care. Critical aspects of motivation are its reflective and unconscious or automatic components. Reflective motivation includes concerns about the likely negative consequences of ulcers and subsequent disability through not doing it (e.g. lack of marriage prospects or further disability).[21] Ensuring that people have reflected on their motivations and have a plan to carry out self-care and risk reduction measures (for example, always soaking feet before bedtime; always wearing shoes outdoors) that will become a regular habit are also important. Automatic habits could be encouraged by empowering people to design their environment in ways that promote self-care, such as by making sure that appropriate footwear and self-care facilities are easily accessible around the home and at work.[22]

We crystallise the operation of the COM-B model for leprosy self-care in Figure 3. In addition, we list the specific actions of community self-care interventions identified in our scoping review of self-care interventions in this series (Ilozumba, *et al.*)[23] organised by the COM-B intervention functions, in Table 1. The purpose of this was to identify the prevalence of different intervention functions in the context of self care of leprosy in low- and middle-income countries (LMICs), which may inform future interventions and initiatives. After data extraction, two of the authors (SC and LK) independently coded the intervention functions. They used the definition of intervention functions from Michie, *et al.*[24] (see Table 2). After coding, their agreement was 56% (29/52 identified interventions). After further discussion, their agreement reached 100% (49/49 identified interventions). The most common intervention functions were 'training' (13/49, 27%), followed by 'education' (12/49, 24%) and 'enablement' (12/49, 24%). Some intervention functions used 'environmental restructuring' (5/49, 10%) and 'modelling' (4/49, 8%), whereas the intervention functions 'persuasion' (1/49, 2%), 'incentivisation' (1/49, 2%) and 'coercion' (1/49, 2%) were less common. The intervention function 'restriction' was not identified in any of the interventions. Future research could consider whether there are barriers and facilitators of self-care for people with leprosy in LMICs that could be addressed using these intervention functions, particularly with some of the lesser used intervention functions such as environmental restructuring or persuasion.

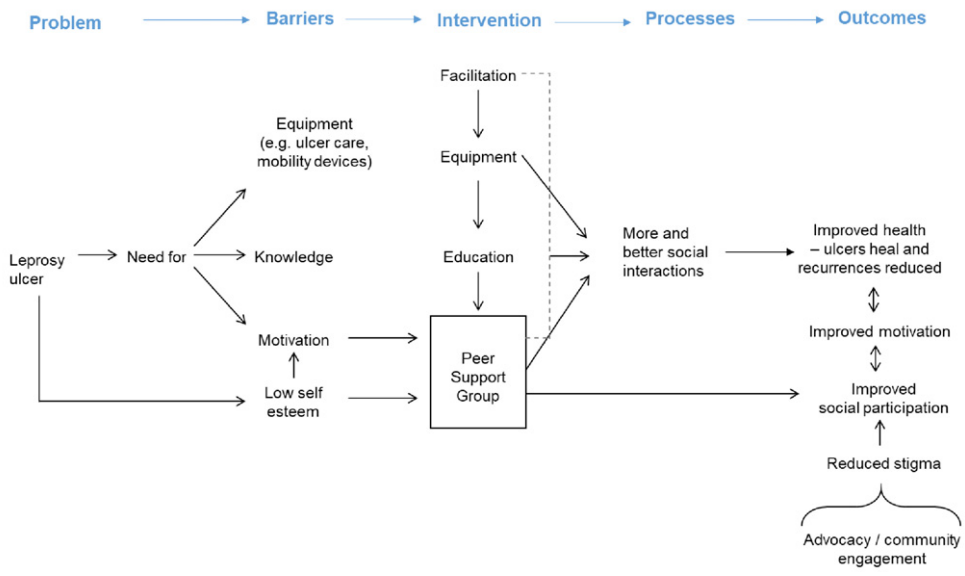

Figure 3. Causal pathway for self-care.

Table 1. Behaviour Change Techniques for the design and delivery of self-care interventions, by intervention function

Author	Description of intervention	Intervention function
Smith *et al.*[25]	A programme of disability prevention jointly designed and implemented by the Ministry of Public Health and Leprosy Mission International. The study was conducted by the Institute of Dermatology of the China Academy of Medical Sciences. The programme had ten distinct parts, in eight differing geographical areas. Some aspects, such as surgery, amputations, prostheses provision, and the sole wound study, were not carried out in every area. Common to all areas were detection and treatment of neuritis, self-care, provision of footwear, training, publicity and health education.	Training Enablement
Li *et al.*[26]	A pilot prevention of disability (POD) study initiated and implemented by the National Centre for Leprosy Control Nanjing. The Guizhou Institute of Dermatology (a department of the Provincial Communicable Disease Centre) first collaborated with the Leprosy Mission International and then American Leprosy Missions. Programme included self-care of eyes, hands and feet, comprehensive therapy for those with complicated ulcers and early detection and treatment of nerve function impairment. Seventy-two public health workers from nine pilot counties attended POD training before the start of the project. Vertical health service skin disease prevention stations provided specialised service for people afected by leprosy. County CDC officies were responsible for integrating leprosy services into general health service at town and village levels. Health workers at county CDC combined POD work with TB control and vaccination activities. Free footwear was provided to those conducting self-care with foot ulcers.	Training Enablement
Li *et al.*[27]	Assumed identical programme as to Li *et al.*[26] above.	Training Enablement

Table 1. (Continued)

Author	Description of intervention	Intervention function
Benbow and Tamiru[4]	Two main stages in self-care groups were set-up: an introductory meeting, screening of possible members, and finally the establishment of the group. Philosophy of the self-care group: (1) voluntary group membership; (2) wound healing materials provided by group members, members had to actively participate in discussions, prevention and montioring activities for themselves and other group members. Shoes were available at subsidised cost of $1.25 to group members. No handouts were available for group members. Meetings were held every one or two weeks (group members decision) and lasted 1.5 to 2 hours. Groups included a group leader and a facilitator once every four weeks. Meetings were structured: welcome, updates, individual group member case discussion, inspection of group members hands and feet, summary of action, and solutions. After six months, groups could decide to continue SCGs or stop. Initially, no formal training for ALERT staff that worked as faciliators but four-day training later introduced. No formal training was provided for group leaders, they were expected to learn by doing and observing the facilitator.	Modelling Training Environmental restructuring Coercion Incentivisation Education
Hounsome *et al.*[28]	The healthcare packages included multiple activities that were delivered at three levels. Healthcare organisation level (training), healthcare facility (training and outpatient secondments) and community level (community awareness raising, stigma reduction workshop, community conversation facilitators, self-help group training, training for CHWS). The intervention included health edcuation sessions and training in foot hygiene, skin care, bandaging, exercises, and wearing of socks and shoes. Patients were provided with food hygiene supplies including a washing basin, soap, salt, towels and Vaseline. Treatment was initiated as appropriate. Patients were also assesed by a mental health professional and medication provided as needed. Custom made shoes were also distributed to participants.	Training Enablement Modelling Education
van't Noordende *et al.*[29]	Main components of self-management of disabilies included inspection, foot hygiene using soap and water, skin care with removal of callous, application of ointment, elevation, exercises, bandaging, and advice on appropraite footwear. The project utilized existing initiatives, e.g. WHOs integrated morbidity management for LF and podoconiosis; the Ethiopian MOH LF and podoconiosis morbity management and disability prevention guidelines; and the Internation Federation of Anti-Leprosy Association's guideline for prevention of diabilities in leprosy. The intervention included people affected by leprosy, LF or podoconiosis and their family members. The participants also recieved basic tools to practice self-care, Vaseline, a bucket, soap and bandages if necessary. The family-based intervention was delivered over several monthly group meetings.	Training Enablement Environmental restructuring Education

Table 1. (Continued)

Author	Description of intervention	Intervention function
Cross and Sah[30]	RECLAIM project was informed by the methodology and results of the Nepal Leprosy Trust's Stigma Elimination program (STEP). The core of the project was the deveolpment of self-efficacy gained as a result of posiive effects of self-care practice. Core activities of self-help groups include literacy programmes, management of revolving loans, and the development of micro-enterprises. Other aspects of the intervention mentioned were: group meetings, self care as applied by individuals and groups, raising social awareness, examination of suspect leprosy cases and referral to health facilities, facilitating access to government resources, ensuring access to referral centres, home visits, advocacy for enactment of rights, follow up of current cases, assistance to secure disability cards, activities to reduce stigma, counselling, encouraging others, training, exposure visits, economic support, provision of bicycles, savings and loan programmes, non formal education, provision of labelled bags, provision of footwear, identity ('being leprosy affected').	Persuasion Modelling Education Training Enablement Environmental restructuring
Cross and Newcombe[8]	A Self Care Training Centre (SCTC) was developed by Nepal Leprosy Trust. The SCTC faciltators provided demonstrations and advice on all self care activities, with a major emphasis on safe methods of daily labour. Land was made available within the Lalgadh Hospital for the small scale farming activites. Additionally, separate male and female dormitories were designated, and a building was converted to resemble a typical village kitchen (dung and clay walls and floors, clay ovens and storage facilities), to provide learning environments.	Education Training Environmental restructuring
Ebenso *et al.*[7]	Self-care groups began in 2004 and were managed by hospital staff. In 2006 SCGSs ownership of the meeting shifted to the group members. They were responsible for their care and the care of group members. Facilitators were either community health assistants or community members. Materials were adapted and translated from the ALERT Ethiopian study by Benbow and Tamiru.[4] Intervention also included access to micro-finance, footwear, crutches. The training and support was more than the transfer of skills and knowledge, but looked at attitude and building up individuals' self image and esteem, with empowerment of group members as the goal.	Education Training Environmental restructuring Enablement

Table 1. (Continued)

Author	Description of intervention	Intervention function
Gidado *et al.*[31]	Self-care group was introduced to the community during a meeting in which the importance of self-care groups, the voluntary nature and non-provision of financial incentives for membership were emphasised. The group began two months later. Baseline data was collected with routine leprosy monitoring forms and each patient was assessed for ulcer, impairment and visible deformity on the eyes, hands or feet. Group met fortnightly and sat in a circle. Group members inspected each other. A health care worker was always in attendance at the meetings.	Education Enablement
Souza *et al.*[32]	Self-care groups served as a reference service for treatment of patients affected by leprosy as part of a research and extension project at the University of Pernambuco. Meetings were held once a month. Learning was built through the exchange of knowledge and the display and reproduction of care by the users.	Education Modelling
Syahputri[33]	'Payung Meureuleuy' self-care group was founded in 2012 and assited patients with leprosy disabilities. During that year they provided explanations, discussions and practice to the members to improve the undersanding of leprosy self-care and confidences. The programme had six months of active learning and practice, including information on frequency of daily baths, foot soaking and empathy.	Education Training Enablement
Madhavan *et al.*[34]	Government general health staff implemented Prevention of Disability (POD services) with technical support from the NGO project, which trained a core team of trainers from the government. Hands-on training was given to all staff and included a demonstation in self-care. Day trainings were delivered in POD camps covering theory (Day 1) and practical demonstrations with patients (Day 2). Workers visited villages during their twice a month routine visits. These visits were to ensure the involvement of persons in their own self-care through their knoweldge of procedures and availability of the tools for self-care in their homes. They recorded any findings in their personal records. Self-care prodedures were based on Inspection, Soaking, Scraping, Oiling and Dressing (ISSOD). None of the required items were supplied from the health services, rather individuals used materials available at home.	Education Training Enablement
Deepak *et al.*[6]	SCG in Nampula were started by two local NGOs in 2010. In Manica local, NGOs started SCGs in 2009. Intervention included training on management of different SCG activities, on care of wounds and prevention of disabilities. Some also were given printed leaflets and learning materials on self-care. Some members were provided with footwear (sandals).	Education Training Enablement
Susanto *et al.*[35]	SCGs with routine monthly activities for those affected by leprosy in families and communities under the supervision of public health nurses at the local PHCs. Training was on maintaining health and eating nutritious foods according to balanced nutrition messages.	Education Training Enablement

Table 2. Intervention function definition and examples (from Michie *et al.*[24])

Intervention function	Definition	Example
Education	Increasing knowledge or understanding	Providing information to promote healthy eating
Persuasion	Using communication to induce positive or negative feelings or stimulate action	Using imagery to motivate increases in physical activity
Incentivisation	Creating an expectation of reward	Using prize draws to induce attempts to stop smoking
Coercion	Creating an expectation of punishment or cost	Raising the financial cost to reduce excessive alcohol consumption
Training	Imparting skills	Advanced driver training to increase safe driving
Restriction	Using rules to reduce the opportunity to engage in the target behaviour (or to increase the target behaviour by reducing the opportunity to engage in competing behaviours)	Prohibiting sales of solvents to people under 18 to reduce use for intoxication
Environmental restructuring	Changing the physical or social context	Providing on-screen prompts for GPs to ask about smoking behaviour
Modelling	Providing an example for people to aspire to or imitate	Using TV drama scenes involving safe-sex practices to increase condom use
Enablement	Increasing means/reducing barriers to increase capability (beyond education and training) or opportunity (beyond environmental restructuring)	Behavioural support for smoking cessation, medication for cognitive deficits, surgery to reduce obesity, prostheses to promote physical activity

Conclusion

Modern psychological and behavioural theory should inform self-care programmes. It should be written into intervention descriptions and facilitator training manuals, and it should inform interaction with people affected by leprosy. Subtle changes from the environment can impact on human motivation through automatic and unconscious pathways, and has been used to promote positive behavioural change in many aspects of life, from encouraging exercise to reducing littering. It can also be applied to self-care behaviours.

Ethics approval

Not required.

Competing interests

The authors have no competing interests.

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Authors' contributions

SC, BC, LK, RJL: contributed to the development and editing of the manuscript. RJL: Director of the NIHR RIGHT funded project at University of Birmingham, contributed to the conception of this review, and critically evaluated the intellectual content. LK: contributed and provided expert knowledge on the COM-B model and its behaviour change techniques. SC and LK extracted data and coded the intervention functions of the self-care interventions identified in scoping review by Ilozumba *et al.*[23]

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