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Individual Health Management – A Comprehensive Lifestyle Counselling Programme for Health Promotion, Disease Prevention and Patient Education

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Keywords
Individual Health Management · IHM · Distant lifestyle counselling · Blended learning · Weight loss · Stress reduction · Health coach · Multi-component lifestyle intervention · E-health approach

Summary
Background: Epidemiological data shows globally increasing numbers of obesity and stress-related diseases. In this article, a comprehensive medical lifestyle modification programme – called Individual Health Management (IHM) – is described in detail and discussed as a promising tool to individually manage and reverse such negative health trends in patients. **Methods:** The IHM programme is based on a blended learning concept. It comprises a 12-week basic training phase, followed by a 9-month maintenance phase, and includes the following key features: 1) web-based and physician-led health screenings; 2) a structured 12-week basic training with a core curriculum providing tuition in behavioural self-management strategies for weight loss and stress reduction; 3) weekly supervised group sessions during the core curriculum; 4) tailoring of materials, strategies and lifestyle goals; 5) continuous self-monitoring and feedback of the achieved progress; 6) regular contact with physicians or health professionals based on either face-to-face or distant lifestyle counselling; 7) recurrent one-day health seminars to ensure the sustainability of obtained results. **Conclusions:** IHM is a multi-component lifestyle intervention programme to increase physical activity, to reduce calorie intake and to practice both self and stress management. Individual care, group support and a tailored web-based programme blend to achieve the desired goals. A randomised control study to evaluate IHM's effects on weight control is currently being conducted.

Schlüsselwörter
Individuelles Gesundheits-Management · IGM · Lebensstil · Gemischtes Lernen · Gewichtsreduktion · Stressabbau · Gesundheitsberater · Mehrkomponenten-Lebensstilintervention · E-Health-Ansatz

Zusammenfassung
Hintergrund: Gemäß epidemiologischen Daten steigen Übergewicht sowie stressverbundene Erkrankungen weltweit an. In der vorliegenden Arbeit wird ein umfassendes medizinisches Programm zur Lebensstilumstellung (Individuelles Gesundheitsmanagement, IGM) vorgestellt und diskutiert, inwiefern es sich als Instrument eignet, um solche negativen gesundheitlichen Trends individuell zu bewältigen bzw. umzukehren. **Methodik:** Dem IGM-Programm liegt das Konzept des gemischten Lernens zugrunde, das eine 12-wöchige Trainingsphase und eine 9-monatige Erhaltungsphase mit den folgenden Schlüsselmerkmalen enthält: 1) internetbasierte und von Ärzten geleitete Gesundheitsuntersuchung; 2) ein strukturiertes 12-wöchiges Basistraining mit Kerncurriculum, in dem verhaltensorientierte Selbstmanagementstrategien zur Gewichts- und Stressreduktion vermittelt werden; 3) wöchentlich supervidierte Gruppensitzungen während des Kerncurriculums; individuell zugeschnittene Materialien, Strategien und Lebensstil-Ziele; 5) kontinuierliche Selbstkontrolle und Rückmeldung über den erreichten Fortschritt; 6) regelmäßiger direkter oder medialer Kontakt mit Ärzten oder Gesundheitsfachpersonal; 7) regelmäßige eintägige Gesundheitsseminare zur Aufrechterhaltung der Behandlungsergebnisse. **Schlussfolgerungen:** IGM ist ein Multikomponenten-Programm zur Lebensstilintervention mit dem Ziel, die Kalorienzufuhr der Betroffenen zu reduzieren sowie selbstwirksam mit Stress umgehen zu können. Um die gewünschten Ziele zu erreichen, werden dabei individuelle Pflege, Gruppeninterventionen und ein maßgeschneidertes internetbasiertes Programm miteinander verbunden. Eine randomisierte, kontrollierte Studie zur Erhebung der Effekte des Programms auf die Gewichtskontrolle wird derzeit durchgeführt.

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Introduction

The 2014 WHO Global Status Report on Noncommunicable Diseases (NCDs) [1] states that among NCDs, cardiovascular diseases, cancer, chronic obstructive pulmonary diseases and diabetes are the heaviest burden. Out of the 38 million deaths due to NCDs in 2012, more than 40% were premature, thereby affecting people under 70 years of age. The majority of premature NCD deaths are preventable [1].The most influential factors in mortality are behavioural and metabolic risk factors, e.g. increased body mass index (BMI), physical inactivity, unhealthy diet or tobacco smoking [2]. This alarming development is noticed worldwide in both high and low-to-medium income countries. The WHO report stresses the need for community, workplace and individual-related approaches and the monitoring of risk factors. Lifestyle interventions on a community level were shown to be feasible, effective and cost-saving in health care systems in different countries [3].

For example, treating established obesity requires intensive education, counselling, multiple resources and ongoing support. For successful behavioural change, factors such as goal setting, tailored interventions, self-monitoring and social support should be included [4]. To date, there are only few reports of successful community-wide weight reduction programmes. The Finnish diabetes prevention study [5] on overweight subjects with impaired glucose tolerance showed that a lifestyle intervention resulted in weight loss and reduced the risk of diabetes. An interactive community-based behavioural intervention [6] showed significant weight loss or prevented weight gain in overweight women. Furthermore, a systematic review from 2010 [7] reported that comprehensive lifestyle modification programmes focusing on diet, physical activity and stress management for prevention of cardiovascular disease and diabetes mellitus type 2 had effects on the reduction of BMI and mortality, despite weak evidence for the reviewed interventions. A recent review [8] examined the effects of lifestyle interventions among adults with or at risk of suffering from diabetes and cardiovascular diseases (CVD). The main outcome was that combining self-management and exercise prevented weight increase, BMI and waist circumference more efficiently than control group interventions.

The Individual Health Management (IHM) is a theory-driven programme designed to promote behavior change. It targets both healthy and ill people, aiming to enhance their individual responsibility, self-determination and health literacy. As core element, self-management shall support optimising physiological skills and psychosocial competencies of the individual, i.e. physical activity, nutrition, self-efficacy and social support. To enhance sustainability, they are to be trained and implemented into daily activities [9]. The lifestyle programme blends a web-based lifestyle modification programme, counselling via face-to-face or telemedicine visits and various forms of group sessions to achieve behavioural change (blended learning concept). To ensure a high standard of professional service, IHM health staff passes a 400-hour coaching and life style medicine training in theory and practice (IHM health coach).

The main objective of this paper is to provide a detailed description of IHM.

Programme Goals

The basic goal of IHM is to empower people to be their own health manager. Secondary goals are reduction of weight, stress, medication intake and cardiometabolic risk factors. Long-term goals are the reduction of morbidity and mortality.

Target Audience

Participants are recruited from private practices, occupational health promotion programmes and community health promotion activities. They should be sufficiently motivated for behavioural change settings. Furthermore, basic internet literacy and computer skills are required as the programme follows e-health self-management principles.

Theoretical Background of Individual Health Management

To enhance the effects of the programme, an approach based on the concept of salutogenesis and the social-cognitive theory of behavioural change was chosen. To achieve a wider outreach, we blended a web-supported tailored lifestyle programme with regular personal counselling and group sessions. The balance of costs and effectiveness should be taken into account when choosing the appropriate scope of the programme [10]. All medical advice on nutrition, exercise and relaxation techniques within the programme should be mostly evidence-based.

Salutogenesis and Principles of Self-Healing: The intervention is based on the naturopathic theory of salutogenesis and principles of self-healing. This concept is based on health resources (e.g., physical activity, nutrition, well-being, sense of coherence and self-efficacy) rather than on health deficits and illness. The process towards a balanced state of health can be influenced by a person's willingness and ability to change their behaviour and attitude. Salutogenesis takes into account the fact that behavioural change and change in the way of thinking follows motivational decision-making, which addresses personal needs and wishes in order to be effective [11].

Social Cognitive Theory and Self-Efficacy: Social cognitive theory considers individuals self-organised, proactive, self-reflected and self-regulated. A person's behaviour is influenced by the environment that is observed, copied and learned from. According to social cognitive theory, behavioural change is also mediated by self-efficacy, i.e. a strong belief that barriers are able to be overcome or goals are able to be reached through one's own ability. Thus, a high sense of self-efficacy increases the chances of successful behavioural change [12].

Blended Learning: Blended learning combines different learning environments, i.e. traditional face-to-face methods as well as web-based communication. This educational tool is increasingly utilised in behavioural change programmes. Blended learning increases the possibilities of interaction by means of web and social communities or through personal counselling. These computer- and web-based approaches make these educational tools accessible to a wide audience, disregarding geographical distances [13]. A recent review [14] of technology-based interventions to maintain weight loss concluded that such interventions are 'most likely to be more effective than conventional care'.

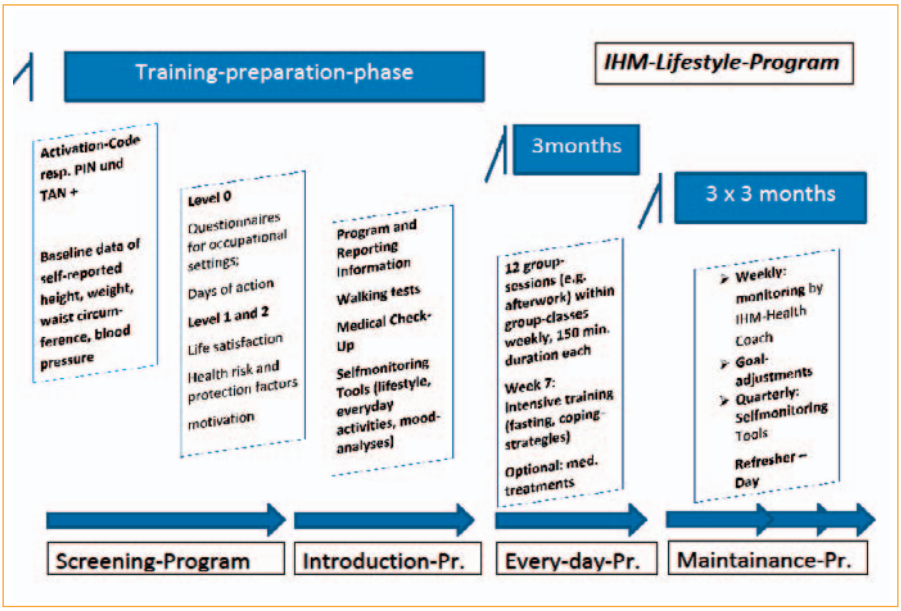

Fig. 1. Individual Health Management (IHM) lifestyle programme – overview.

Methods

IHM Programme: Overview and Detailed Intervention Plan

In this case, an internet-based health portal called Virtual Tool for Education, Reporting, Information and Outcome (VITERIO®) is used (VITERIO® GmbH, Abensberg, Germany). All collected data is anonymised and stored on a server belonging to the Technical University of Munich, Germany.

IHM comprises a 12-week training phase followed by a 9-month maintenance phase. It is structured into a 'screening programme' (life satisfaction and health risk awareness), 'introduction programme' (including in-depth health risk and protection factors analysis, medical check-up and presentation of the programme), 'everyday programme' (after-work group sessions) and the 'maintenance programme' (monitoring of health parameters, motivational refresher meetings, medical check-ups). The actual lifestyle programme starts with maximum 3 health seminars where in-depth programme information and instructions are provided (fig.1).

Screening Programme: A screening process precedes the lifestyle changing programme. There are several levels: level 0 is used in occupational and community health promotion settings. Screenings 1 and 2 are based on detailed psycho-physiological and behavioural data, primarily used in outpatients. Self-reported questionnaires identify different risk groups: healthy, overweight (light, moderate and heavy), pre-hypertension, hypertension, pre-diabetes, diabetes, pre-burnout, burnout, smoking cessation. Special features have been developed for health checks of employees. Hypertension risk is calculated based on data from the Framingham sample; diabetes risk is determined based on the FINDRISK questionnaire (table 1).

Introduction Programme: The initial internet-based screening is followed by a one-hour consultation with a trained and experienced physician to bolster the participant's self-efficacy and thereby enable her or his ability to change risk behaviours. To enhance the success of behavioural change, the risk of developing diabetes, hypertension, and/or burnout is discussed [18]. Physician counselling includes medical history taking, physical and laboratory examination and evidence-based instructions with clear goals on diet, physical activity, stress reduction and behavioural change. Depending on the severity of the medical condition, the goals are pre-formulated (e.g. those moderately overweight are to lose 10% of their weight within 12 weeks) and generated by the VITERIO website. The lifestyle goals are to be followed at home [19]. The IHM health coach takes into account the individual's experience with previous behavioural change attempts (e.g., calorie restriction diets) and asks about obstacles to lifestyle modification.

IHM Introduction Seminars and Self-Monitoring Period: Participants attend up to 3 group sessions, which are scheduled close to the doctor's appointment to maintain a high motivation for behavior change. This half (e.g. after work) or one-day group session, conducted by an experienced physician and IHM health coach (core team), aims to inform and empower the participants to successfully conduct the lifestyle programme. Each participant is provided with a kit containing self-monitoring tools such as a pedometer, visual analogue scale (VAS) and waist band. Participants are instructed how to use the tools by hands-on teaching. To assess physical capacity, each participant performs a 6-min walking test. Perceived exertion is rated on a Borg scale [20, 21]. Outcome expectancies are discussed in a general manner to clarify the intervention's aim of promoting weight loss or stress reduction. The structure, content and reports of the web portal as the main source of information are explained in-depth. A paper-based 7-day self-monitoring protocol is provided to record the participant's daily amount of steps, symptom severity or mood state, weight, waist circumference and blood pressure.

To assess daily activities and associated moods, the authors developed a time and mood analysis protocol, which is filled in by each participant during the self-monitoring phase following the group session. The protocol records time spent (in minutes) on specific private or occupational activities (e.g., leisure time, eating, organising, meetings) as well as the associated mood, measured with VAS. Data are transferred manually by the participant in a web portal, depicted in mood diagrams and pie charts. The participant uses these diagrams to figure out which areas to address first for the desired behavioural change. The next session involves in-depth instruction for the training modules nutrition, exercise, relaxation (stress management), naturopathic self-help and treatment options.

Everyday Programme (*Personal Care and Group Classing):* Following the initial group session phase, face-to-face or telemedicine counselling takes place to determine the final lifestyle goals and to tailor the programme. The SMART approach is used, which requires goals to be [22] specific (S), measurable (M), attainable (A), realistic (R) and time-bound (T). The 12-week active training programme targets the core lifestyle components: exercise, relaxation and nutrition. It is accompanied by 12 after-work group seminars. The participant receives schedules or log books and keeps a digital record on the progress made. In case of occurrence of symptoms such as sleep disorder, freezing or recurrent infections, naturopathic self-help techniques or treatments may be applied.

During counselling the results of self-monitoring are scrutinised and used for behavioural goal setting, e.g., the average daily step count is taken as a baseline measure to create a recommendation for physical activity. The goals determined by the participant and based on the time and mood analysis could fea-

Table 1. Screening and self-reported questionnaires

Questionnaires	Screening 1	Screening 2	Literature in extracts
Socioeconomic and demographic variables	X		
Self-reported height, weight, waist circumference, Systolic and diastolic blood pressure Risk assessment on hypertension and diabetes	X		[15, 16]
Motivation	X		
Life satisfaction	X		
Risk assessment on burnout	X		
3-level-stresstest	X	X	
Psycho-vegetative test		X	
Mental state in general		X	
Stresses and strains		X	[17]
Subjective depression, vitality, wellbeing		X	
Cardiovascular and metabolic risk factors		X	
Pessimism		X	
Nutrition index		X	
Moving index		X	
Physical power		X	
The body's defences		X	
Sense of coherence		X	
Social support		X	
Consecutive questionnaires			
Perceived Stress Questionnaire		X	
CAGE-Test (alcohol)		X	
Backpain-Questionnaire		X	
Current smoker Questionnaire		X	
Workingplace-specific questionnaires			
Employee attitude survey		X	
Presenteeism		X	

ture behavioural aspects differing from those recommended by the lifestyle programme. A 'softened approach' using individual goals is seen as one of the main reasons for successful behavioural change with IHM.

At least once a week for a period of 3 months the participants receive a counselling and training session (group classing), for 150 min each. Group classing is organised mostly in after-work sessions and based on personal experience of the attendees, e.g., with cooking sessions of tasty low-calorie dishes, physical exercises and relaxation techniques. Socio-psychological group support techniques are applied.

Continuous Self-Monitoring: Continuous self-monitoring is advised depending on the medical necessity (hypertension, diabetes) and the lifestyle measures addressed (weight, waist, daily steps). In the case of weight loss programmes, regular (daily) weight measurement is recommended, considered psychologically harmless [23, 24]. Furthermore, participants keep track of their health behaviour progress in tailored schedules.

Food Diary: To record daily food intake participants are provided with an electronic food diary. There is some evidence that adherence to weight loss programmes is significantly greater when using personal digital assistants compared with paper records [25]. During this time the counsellor will encourage the participant in developing strategies to overcome barriers and achieve behavioural goals. Additionally, self-help material for relapse prevention is made available.

Maintenance Programme: Subsequent to the initial 12-week basic training phase, the maintenance phase comes into action to reinforce the new behaviour. During this phase, regular appointments either face-to-face or via telemedicine encourage and remind participants of their programme and also provide detailed advice on strategies aimed at avoiding relapses. Refresher weekends (at least one day) are organised every 3 months.

Quarterly Self-Monitoring: Self-monitoring, time and mood analysis and screening are repeated in preparation of the quarterly refresher seminars. The participants are strongly encouraged to use the results of self-monitoring to finalise their lifestyle goals.

Distant Lifestyle Counselling: All participants are monitored weekly (e.g., body weight, number of steps) with the help of a graphic tool in VITERIO by the IHM health coach who organises a monthly routine distant lifestyle counselling by email or telephone.

Refresher Seminars: There is a quarterly refresher seminar with personal contact to the IHM health coach. At the end of the programme, participants undergo a medical examination conducted by the physician.

Recommendations and Targets of the IHM Training within the Web-Based Tailored Lifestyle Programme (VITERIO)

The VITERIO website contains self-help or supporting material for the lifestyle programme following the principle of 'check', 'plan' and 'act' in health. These aspects are mirrored in the website's menus including instructions, schedules, log books, audios, videos and written information (Info@zepte®) that contains the core messages in concise, easy to read language. All material required for self-monitoring can also be printed by the participants for offline usage.

Physical Activity

Daily Activity (10,000 steps per day): The baseline step count is gradually increased by adding at least 500 steps each week [26].

Moderate Physical Activity (3,000–4,000 steps within 30–40 min per day): This unit is equivalent to a brisk walking pace [27].

Resistance Training (20 min with a pull-up bar or TheraBand® twice a week (40 min per week)): instructed in group sessions. The exercises allow for full-body strength training with an emphasis on core muscle groups. Warm-up and stretching sessions complement the workout.

Nutrition

Healthy Eating: Five servings of fruit and vegetables per day, a maximum of 3 servings of red or processed meat per week, use of mono- and poly-unsaturated fats, whole-grain cereals and bread are allowed. Written information and group sessions support the participant. Recommendations are to be followed mainly during the maintenance phase subsequent to the initial 12-week basic training period.

Food Restriction: To reach negative energy balance, energy-dense foods (sugar-sweetened beverages, desserts and sweets, alcohol, refined grains, bleached-flour products and snacking) are restricted. The consumption of carbohydrates after 6 p.m. is avoided on 3–5 days per week, except for one day per week without any restriction [28].

Calorie Restriction: To achieve negative energy balance, ca. 1,000 kcal on one day per week and ca. 400 kcal on week 7 within the 12-week basic training is recommended. Since fasting requires the participant's consent and willingness, which is difficult to demand of those not familiar with food restriction, a low-calorie week may be more motivating compared to a fasting week [29]. Alternatively, participants may choose to follow a 25% energy restriction diet twice a week, the so-called 2-day diet. This method of intermittent energy reduction seems to be just as effective as a continuous energy restriction [29]. Additionally, an alternative meal with selected ingredients is possible.

Stress Management: A relaxation period of 20 min per day is recommended. The self-reported information from the screening and the 'time and mood analysis' identify personal stress activators and the participant's areas of stress reaction as being either physical, functional-physiological (e.g. sleep disorder) or mental (e.g. depressive mood). This allows certain methods of intervention such as the avoidance and removal of stressors and the provision of adequate rehabilitation techniques.

All participants record and review their activities as well as their associated moods via VAS and a daily protocol in order to better understand the interconnection between stressful events, beliefs and emotions and their consequences. The first step in stress management is muscle and breathing relaxation exercises. Subsequently, mindfulness-based apperception is trained and supported by sensory training using stimuli to trigger a relaxation response and to ameliorate emotional regulation. After successful implementation, acceptance and tolerance of stressful situations are practiced through sitting meditation built on the aforementioned 2 exercises. The ultimate step is to apply rational-emotive behaviour therapy (REBT) using the skills and competencies of the previous strategies. REBT enables the patients to change their attitudes towards stressful events or to address the problem at its root. At least 20 min of exercise per day are recommended to achieve a sustainable effect [30, 31].

Conclusions

IHM is based on empirical findings on nutrition, exercise, stress management and behavioural change, and was created to achieve lifestyle modification with the combined help of personal coaching and a web-based e-health portal. The intervention entails 12 months of treatment featuring individual advice, group contact, a semi-structured 12-week curriculum and an individualised maintenance phase with distant lifestyle counselling. Since cardiometabolic diseases and cancer, deemed to be the leading causes of death, arise from a complex interplay of behavioural and genetic risk and protective factors, a multifactorial approach has great potential to enhance risk reduction and protection.

Another potentially important predictor of successful behavioural change and weight loss is self-efficacy [32]. Interventions that support self-efficacy may be able to improve outcomes. To achieve this goal, an effective provision of tailored programmes and interactive communication with regular advice on diet and physical activity or motivational support may be necessary [33].

In addition to personal coaching, a web-based translational approach combines weekly group sessions covering 12 weeks to extend the outreach of the Diabetes Prevention Programme for reduction of various cardiovascular risk factors [34]. The Active Body Control (ABC) programme, which combines telemonitoring and diet with online support, was reported to reduce weight, HbA1C levels and medication costs, thus making it a cost-effective intervention [33]. Home-based exercises may be just as efficacious as supervised training [35]. A combination of both should be even more successful. Obstacles to internet use at home, which may affect individuals with a low socioeconomic background or the elderly, may be overcome through support from fellow intervention users, technical support and training classes. Furthermore, to reduce attrition rates it is also necessary to monitor behaviour continually and to have the participant keep track on the progress made by using charts and graphics. Neve et al. [36] reported greater weight loss through more intensive website use. Access to an online community, i.e. the chance to share experiences with other participants, reduced attrition rates. The effectiveness of counselling should not be underestimated: the RENEW trial [19] showed greater functional capacity in participants who were supported by regular telephone counselling. By defining tailored goals and monitoring their behavioural change process, the participants, assisted by a physician, trained health professional or nurse, should achieve better weight maintenance results. Weekly classes and lectures in a group setting create the supportive base that facilitates adherence. A work published by Appel et al. [37] showed that remote provision of lifestyle intervention regarding weight loss involving telephone, email and internet coaching supported by regular physician consultation had similar effects to face-to-face communication. Furthermore, quarterly consultation with a primary care physician (PCP), complemented by monthly brief lifestyle counselling, had a greater effect than the conventional care provided by quarterly PCP appointments alone [38].

IHM as described in the present article has been practised and continuously refined according to experience with hundreds of patients at our own outpatient unit. Due to this ongoing developmental process, a systematic evaluation of the programme's effects is, at the present time, not feasible. However, a randomised controlled study to confirm the efficacy of the IHM on weight control is currently being conducted in Bavarian spa-regions [39]. This multicentre study is designed for 150 overweight subjects (BMI 28–35). Of these, 100 will be assigned to IHM and 50 to conventional care receiving written advice for a healthy lifestyle. The primary endpoint will be weight reduction by the 12th month. Results are expected to be available sometime during the first half of 2016.

Disclosure Statement

The authors declare that there is no conflict of interest.

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