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Health care utilization and cost-effectiveness analyses in prevention studies in the mental health care field

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ABSTRACT

Current literature reports a serious lack of research on the cost-effectiveness of health promotion and prevention programs in the mental health care field. This article gives an overview of the general health economic approach in mental health promotion and describes the methodology of analyzing the budget consequences and cost-utility of innovative stress prevention programs. The programs were implemented and tested in four studies aiming for stress-reduction at the workplace, in educational settings and relapse prevention.

1. Introduction

The huge and constantly rising economic impact of poor mental health on the society is widely acknowledged (Wittchen et al., 2011; Gustavsson et al., 2011). Recently, the annual personal, social and economic costs of depression and anxiety disorders have been estimated at €136.3 billion in the European Economic Area alone, with €99.3 billion per annum due to productivity losses from employment. Poor mental health is the leading reason among others for early retirement or withdrawal from the workforce on health grounds (McDaid & Park, 2011).

However, this significant issue is not appropriately addressed in health economic research. Mental health economy is still a comparatively new and underdeveloped discipline. The specific characteristics of psychiatric disorders require a certain adaptation of general health economic approaches and methods.

Despite a slowly rising number of cost or cost-effectiveness studies during the last two decades in the mental health care field, the increase in knowledge is insufficient to effectively improve mental health care policies or budget allocation.

In the field of mental health promotion and mental disorder prevention the situation is even worse. Prevention science as a discipline postulates that empirically verifiable risk and protective factors predict the likelihood of undesired health outcomes. Thus, negative health outcomes can be prevented by reducing or eliminating risk factors along with enhancing protective factors in individuals and their environments. This has been found to be effective in preventing such diverse problems as adolescent tobacco, alcohol or drug abuse, delinquency, violence, and other health risk behaviors (Hawkins, Catalano, & Arthur, 2002).

Although there is serious lack of research on evidence on the cost-effectiveness of health promotion and prevention programs in the mental health care field (Zechmeister, Kilian, McDaid, & The MHEEN Group, 2008), the potential benefit of such programs for the economy as well as the society is assumed high (Srivastava, 2008). The major challenge of cost-effectiveness studies on mental health promotion or mental disorder prevention activities is the long-term nature of effects and the latency of program outcomes. Additionally, health economic studies in this field have to act across sectors and have to take into account costs and resource consequences within and beyond the health care system (Salize & Kilian, 2010).

Ten years ago, a European review of the cost-effectiveness of primary health promotion interventions was carried out in the areas of alcohol, smoking, obesity, illicit drug taking, sexual risk taking, mental illness and behaviors related to heart disease. Estimated societal costs of preventable illness was found to be £200 billion. Social returns on investment ranged from £34 to over £200 returns for each £1 spent on primary health promotion or prevention activities when the societal perspective is included into the analysis (Lister et al., 2006). In other international studies, returns on investment from a societal perspective ranged from $ 20 to $50 for each $1 spent in a health promotion or prevention program (Srivastava, 2008).

However, in the mental health care field such benefits need exploration further. A recent systematic review on the potential cost-effectiveness of mental health promotion and mental disorder prevention programs included 46 randomized controlled trials focussing on early years and parenting interventions, action

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set in schools and workplace, and measures targeted at older people (McDaid & Park, 2011). Nine out of the ten economic analyses regarding the workplace reported favorable outcomes, although most of these studies looked solely at the impacts for employers (e.g. absenteeism or poor work performance). However, a considerable variability in quality, outcome measures and perspectives of these studies makes policy comparisons difficult.

Moreover, varying social welfare and legal frameworks, economic power or health care systems across countries require specific national approaches when analyzing mental health promotion or prevention policies.

The "Competence Centre for the Prevention of Mental and Psychosomatic Disorders in Work and Educational Settings" (PPAA), headed by the Centre of Psychosocial Medicine at the Heidelberg University is one of the first major research networks in Germany in this field, combining more than ten prevention oriented studies from all over the Federal State of Baden-Wuerttemberg (Herpertz et al., 2013).

Due to the serious lack of evidence and a massive annual growth of the financial burden caused by poor mental health, the PPAA research network includes a health economic study named "Cost-effectiveness of stress prevention and management". The here reported health economic study analyzes the budget consequences and cost-effectiveness of innovative prevention activities as implemented and tested by four PPAA-trials. Findings are meant to support health care planning and decision making in the field of mental health promotion and disorder prevention.

This paper describes the overall health economic approach and specific methodological problems which our health economic study has to tackle.

2. General health economic approach

The general health economic approach poses the basic question whether an intervention is worth its cost, given that the effectiveness of the intervention has been confirmed. Any study trying to answer this question has to assess two basic inputs: costs and outcomes. All types of health economy analyses statistically relate these inputs to one another.

Generally, the cost-effectiveness of a treatment or health care intervention will be assessed by computing the incremental cost-effectiveness ratio (ICER), defined as the differential cost of a new treatment and treatment as usual, divided by the outcome differential of the two. The ICER indicates the extra cost per unit of outcome improvement. The statistical ICER-analysis has to take into account certain stochastic uncertainties of cost-data (e.g. skewness) and is described in more detail e.g. in Salize and Kilian (2010).

Health economic methods differ primarily in how they operationalize study outcomes. The "cost-benefit analyses" (CBA) aggregates both inputs (costs and outcomes) in financial terms. This is the reason why this type of health economy analyses are rarely applied in the mental health care field, where the financial value of mental health care outcomes is hard to express in Euros, Dollars or any other currency. The "cost-effectiveness analysis" (CEA) operationalizes and assesses the outcomes of interventions as "natural" units (e.g. the number of reduced hospital stays, smoking cessation rates, symptom-free days, lower carer burden etc.). Thus, CEA is highly feasible for treatments aiming at acute or chronic states of disorders, where outcomes can be measured in a reasonable time-period.

However, mental disorder prevention or mental health promotion activities often show broader or vague effects that are hard to operationalize. In health promotion and disorder prevention, such a program is recommended to be carried out for an absolute minimum of around three to nine months to show results in health risk reductions or cost-effectiveness (Pelletier, 2001). Particularly when targeting the mental state of healthy subjects, prevention or promotion activities often need much longer time-horizons for outcome improvement.

2.1. Cost utility analyses and quality adjusted life years (QALY)

These problems are tackled by "cost-utility analyses" (CUA). Compared to CEA, cost-utility analyses measure outcomes using unidimensional generic utility scales, such as the "quality adjusted life years" (QALY) or the "disability adjusted life years" (DALY).

QALYs are measures combining the additional life years gained by a certain health care intervention or program with the quality of life a subject attributes to this lifespan into one single parameter. Likewise, DALYs represent the years spent with a certain disability weighted with the individually perceived degree of the impairment. Thus QALYs or DALYs are subjective and universally applicable outcome parameters for comparing health benefits across sectors, disorders, samples or populations. It can be assessed in both, patients and healthy subjects. For application in CUA, the cost per QALY must be calculated additionally, depending on the specific health program or intervention of focus.

QALYs emphasize the user or patient perspective on the outcome of health interventions. Against the traditional model of medical roles, where professionals or experts have the power and decide "objectively" whether a treatment or intervention has succeeded or failed. Therefore QALYs as a measure for health outcomes represent a significant paradigm shift. This shift is in line with increasing efforts to change the traditionally paternalistic mental health care sector into a more user-orientated and participatory discipline.

Furthermore, QALYs are likely to reflect the effects of mental health care interventions in life domains such as living conditions, occupation or social relations. Much more than in somatic medicine these domains are core targets of mental health care intervention. Usually effects in these domains are difficult to assess with "objective" parameters or by expert opinion and thus are eligible for subjective measurement.

Due to these advantages, QALYs were preferred as measure of outcomes chosen for the economic evaluation of prevention programs and trials in the PPAA-network. Below is a detailed description of the specific approaches.

3. Studies

Health economic analyses (PPAA study "Cost-effectiveness of stress prevention and management") are conducted along with four PPAA-trials aiming at stress-reduction at workplace, in educational settings and relapse prevention. These trials include:

PPAA study "Preventive occupational health intervention to promote the quality of life of nursing staff over 45 years of age" (Maatouk et al., 2016): Due to the aging workforce in Western countries and to master the increasing demand for health care provision, health care organizations increasingly have to rely on an aging nursing workforce. At the same time studies point to diminished work ability – i.e. the physical and psychological capability of a worker to perform his work – particularly in older nurses. Poor work ability was shown to be closely related to diminished mental and physical well-being, emotional exhaustion, intention to leave the nursing job and sick leave (Ahlstrom et al., 2010, in Maatouk et al. (2016)). The aim of the project was to develop and evaluate a complex prevention program that combines key elements of occupational health interventions. The preventive occupational health seminars were implemented and evaluated by a two-arm