ABSTRACT

INTRODUCTION: Self-care includes actions and measures individuals take to improve their health and well-being, prevent and decrease the likelihood of disease, and to restore health after illness or injury. Different methods are used in order to identify the nature and extent of the impact of self-care on different stakeholders and to inform and guide the design of health policy.

METHODS: This article, based on a literature review, examines different aspects of self-care and identifies methods used to value self-medication and self-care in general.

RESULTS: Self-care is part of a continuum of care. Daily lifestyle choices and self-medication represent two significant aspects of self-care. The valuation of self-care may concern the health or socioeconomic impact it presents, or follow an integrated approach, examining both the health and socio-economic results. Health Technology Assessment (HTA) is a methodology for the multidimensional and multidisciplinary assessment of interventions and products in healthcare which has not yet been applied to self-care.

DISCUSSION: The practice of self-care translates to the maintenance and improvement of health status, and has potential for significant cost reductions through the prevention of disease and the decrease of need for professional care. As the role of HTA in health policy decision-making expands, it could potentially be used for self-medication and the assessment of non-prescription products, complementing existing sources of information on self-care.

CONCLUSION: Valuing self-care is essential for increasing confidence and drawing attention and interest to its practice. It allows self-care’s full potential in contributing to individual and public health to be realized.

Key words: Self-care, self-medication, non-prescription medicines, assessment, social and economic value.
INTRODUCTION

Self-care includes actions and measures individuals take to improve their health and well-being, prevent and decrease the likelihood of disease and to restore health after illness or injury^{1}. A significant aspect of self-care is the use of non-prescription medicines for minor ailments and long-term conditions.

The impact of self-care concerns not only the health status of individuals practicing self-care, but also includes a series of direct and indirect consequences, affecting healthcare professionals and providers, the consumer pharmaceutical industry and healthcare systems in general. Different methods are used in order to identify the nature and extent of the impact of self-care on different stakeholders and to inform and guide the design of health policy.

This article presents the various facets of self-care and examines the different methods employed for its evaluation and assessment.

METHODS

The article is based on a literature review. In preparation for the article a search in standard databases of scientific articles was performed to identify material on self-care and self-medication, as well as on the evaluation and assessment of the socioeconomic impact of pharmaceutical products and healthcare practices. Presentations from lectures and conferences complemented the sources of information, while consumer surveys were used to identify some consumer perceptions relating to self-medication.

RESULTS

SELF-CARE

Defining self-care

Assuming that health choices are part of a continuum of care, self-care would be at the starting point, with individuals making daily and lifestyle choices to maintain and improve their health status^{2} (Figure 1). Throughout this continuum, individuals have a varying degree of participation in their care, either through self-medication for minor ailments and symptoms of chronic diseases, or through the self-management of chronic conditions.

Figure 1: The care continuum. Adapted from reference 2.
The notion of the continuum of care may blur the dividing lines between different types of care. However, it is possible to identify daily lifestyle choices and self-medication as two of the most significant aspects of self-care. Core elements of self-care that could be considered as part of the daily lifestyle choices an individual makes include good nutrition, physical activity, psychological health and risk factor avoidance.

**The practice of self-medication**

Pre-conditions for the practice of self-medication are the sale of non-prescription medicines and the provision of information to individuals on the medicines’ availability and use. The possible indications for a responsible practice of self-medication with or without an initial medical diagnosis have been identified in an AESGP study carried out for the Directorate-General for Health and Consumers of the European Union and are presented in Figure 2.

**Figure 2: Self-medication indications**

- Acne
- Allergic conjunctivitis
- Cold
- Cold sores
- Constipation
- Cough
- Diarrhoea
- Emergency contraception
- Erectile dysfunction
- Fever
- Flu prevention
- Flu treatment
- Haemorrhoids
- Hayfever prevention
- Headache
- Indigestion/heartburn
- Insomnia (temporary)
- Mild/moderate pain
- Minor cuts and bruises
- Mouth ulcers
- Nausea from known causes
- Smoking cessation
- Sore throat
- Symptoms of PMS
- Topical bacterial infections
- Weight management
- Arthritic pain
- Caries prevention
- Cholesterol lowering/lipid control
- Dermatitis/eczema
- Hayfever treatment
- Male pattern baldness
- Neural tube defect prevention
- Anxiety
- Asthma
- Benign prostatic hypertrophy
- Chronic insomnia
- Depression (mild to moderate)
- Diabetes (prevention of complications and treatment with oral agents)
- Gout
- Heart disease prevention
- Herpes genitalis
- Hypertension
- Incontinence
- Inflammatory bowel disease
- Irritable bowel syndrome
- Malaria prevention
- Menopause syndrome
- Migraine
- Obesity
- Oral contraception
- Osteoporosis prophylaxis
- Psoriasis (mild)
- Rheumatism
- Venous leg ulcers

Short-term use/acute condition

Recurrent/semi-chronic condition

Long term use/chronic condition

Doctor consultation & other health professional advice & patient self-management (with/without medical device)
The market share of non-prescription medicines in relation to the total pharmaceutical market in terms of value is presented in Table 1. The share of volume of sales is substantially higher with non-prescription medicines accounting for 50% of all packages of pharmaceutical products supplied.

Table 1: The non-prescription medicines market as a percentage of the total pharmaceutical market in 2009 (Source of data: AESGP Economic and Legal Framework 2010, with information from AESGP national trade association members and IMS)
Consumer studies indicate the wide practice of self-medication. Studies in Austria and France found 77% and 80% respectively of the population self-medicating to address minor ailments, while a UK study found nearly nine out of ten self-medicating for common health problems. Headache, cold, cough and allergies are often cited by consumers in different countries as the conditions for which they most commonly self-medicate. Prior use and knowledge of a non-prescription medicine is also given by consumers as main a reason behind the choice to self-medicate, with physicians and pharmacists being the leading sources of information on non-prescription medicines.

**STAKEHOLDERS**

**General Public**

Through self-medication, individuals gain more autonomy and assume responsibility for their health. Studies indicate patients accepting the notion of increased responsibility, with those who take an active stance on self-care being more likely to detect and address a condition on a timely basis. By self-medicating, individuals save the time associated with a visit to a physician’s practice (travel, waiting time) and avoid loss of wages. The price reduction following the reclassification of medicines from prescription-only to non-prescription status often translates to increased access and choice, especially in healthcare systems where prescription medicines are not fully reimbursed. However, in order to avoid potential misuse and abuse, it is essential that individuals self-medicating are well-informed.

**Healthcare professionals**

Physicians agree with the basic principles of responsible self-medication and accept a number of self-limiting conditions which could be treated by non-prescription medicines. For them, self-medication translates to less time to deal with minor ailments and complaints and more time to dedicate to patients requiring professional care. However, the ‘case-mix’ change could also potentially lead to some reduced use of physicians, who may perceive increased self-care as loss of control. It is also important that physicians are aware of the self-medication practices of their patients when they do consult.

Pharmacists represent a category of health professionals whose education and training are arguably underutilized within the healthcare provision setting. In the practice of self-medication, they are often asked by patients for guidance and advice, thus using their skills more effectively and assuming an expanded and enhanced role in the provision of care.

**The Consumer Pharmaceutical Industry**

An important activity of the consumer pharmaceutical industry is the reclassification of medicines from prescription-only to non-prescription status. This presents a mixed impact for the pharmaceutical industry as a whole which may concurrently face losses in the prescription market and gains in the non-prescription sector. Additionally, prices of non-prescription medicines are usually lower compared to prescription-only medicines, although they are addressed to a wider consumer base.
Third-party payers

Increased self-medication leads to decreased expenditure for third-party payers\(^{12,19}\), as non-prescription medicines are usually not reimbursed. The maintenance of a good health status and the timely treatment of conditions before professional care is required, both associated with self-care, are factors indicating potential for cost savings for third-party payers\(^1\). Moreover, early self-treatment of minor ailments may lead to decreased absenteeism\(^{20}\) and may help prevent the development of complications.

Table 2 presents the impact on different stakeholders from a shift to self-medication for minor ailments previously addressed with professional care and prescription medicines.

**Table 2: Shift to self-medication\(^{20}\)**

<table>
<thead>
<tr>
<th>Impact of volume shift from prescribed items to self-medication</th>
<th>Affected Party</th>
<th>Positive/Negative impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment by doctor</td>
<td>Doctors</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Patients</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Public funds</td>
<td>+</td>
</tr>
<tr>
<td>Treatment with medicines</td>
<td>Patients</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Public funds</td>
<td>+</td>
</tr>
<tr>
<td>Patient co-payments</td>
<td>Patients</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Public funds</td>
<td>-</td>
</tr>
<tr>
<td>Freed up doctor’s time</td>
<td>Patients</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Doctors</td>
<td>+</td>
</tr>
<tr>
<td>Absence from work seeking treatment</td>
<td>National economy</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Employers</td>
<td>+</td>
</tr>
<tr>
<td>Absence from work caused by illness</td>
<td>National economy</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Employers</td>
<td>+</td>
</tr>
<tr>
<td>Travel:</td>
<td>Patients</td>
<td>+</td>
</tr>
<tr>
<td>i. Travel-related</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. Time-related</td>
<td>Patients</td>
<td>+</td>
</tr>
</tbody>
</table>

**METHODS TO VALUE SELF-CARE**

**HEALTH IMPACT**

Evidence-based approach

In evidence-based medicine, the evaluation of the clinical effectiveness of interventions or products is based on evidence classified according to the quality of research. Different hierarchical systems have been proposed for the classification of research studies\(^{21}\) with an example presented in Figure 3. In general, when comparing treatment effects, a preferential recognition is given to randomized controlled trials\(^{22}\). In comprehensive searches of literature for the latest relevant evidence, and in order to avoid reporting bias, not only observational and peer-reviewed published studies are included, but also ‘grey’ literature (eg. unpublished reports), although this is given less weight\(^{23}\).
Patient-reported outcomes

Focusing on the patients’ perspective, subjective indicators are increasingly included in the assessment of clinical outcomes in randomized clinical trials and other studies. Different indexes are used to measure patient-reported outcomes such as the Quality of Life (QoL) and the Health Related Quality of Life (HRQL). Measures for patient-reported outcomes can also be distinguished between health-profile indexes, such as the Short Form (SF)-36 and the Sickness Impact Profile, and preference-based measures, such as the EQ-5D or the EuroQol Instrument.

The indexes may be generic or disease-specific and provide a multidimensional assessment of the illness and treatment options, examining physical and non-physical aspects, such as mobility, pain and social and cognitive function.

A measurement unit of the utility of interventions widely used in healthcare is the quality-adjusted life year (QALY). QALY values are standardized using weighting factors. The weighting factors used for the quality adjustment of life years derive from HRQL measures or other methods eliciting the patient utility relating to a health outcome or status. Measuring outcomes as QALYs allows the direct comparison of the utility gained by products or interventions that may be entirely different from one another.

Socioeconomic impact

Different methods have been proposed for the collection of information on the use and the behavioral patterns related to the use of non-prescription medicines, including the retrieval of information from health records (when applicable), retrospective and prospective studies, as well as observational studies at the points of sale of non-prescription medicines.

Economic evaluation methods

Economic evaluation methods examine potential benefits and costs of a product or intervention.
in comparison to alternatives. They include the cost-utility, cost-effectiveness, cost-minimization and cost-benefit analyses. In cost-utility and cost-effectiveness analysis, benefits are respectively measured in terms of health outcomes and utility gains\(^\text{30}\). A cost-benefit approach examines both benefits and costs in monetary terms\(^\text{32}\). When outcomes with the compared products are similar, a cost-minimization analysis may be used, examining only the difference in costs.

The results of an economic evaluation cannot define whether an individual product can be considered to be expensive or not. However, it provides a direct comparison of a product to the alternatives (other products or procedures), defining its relative cost and allowing informed decision making on whether it should be adopted. In the case of a cost-benefit analysis the presentation of both benefits and costs in monetary terms allows the direct comparison of technologies from different sectors\(^\text{33}\).

**Decision modeling**

Decision modeling is a method presented in literature as applicable for the analysis of costs and benefits associated with self-medication. Decision modeling provides a conceptual framework for incorporating real data with assumptions about complex behavioral dynamics. A decision tree is the simplest structure for framing a decision model\(^\text{19}\). Bayesian statistics can be applied in decision modeling in pharmacoeconomics, allowing a more rigorous analysis of data\(^\text{34,35}\). Markov models can also be used to simulate transitions to different health states\(^\text{36}\).

The decision analysis model presents flexibility and can account for the complexity of different scenarios. However, gathering the behavioral data required for the construction of a decision model and the statistical analysis can be costly and time-consuming\(^\text{19}\). When using the results of a decision modeling analysis for the assessment of the socioeconomic impact of a product or intervention and the design of policy, there needs to be transparency of the reasoning, and justification of the assumptions made for the construction of the model\(^\text{37}\).

**Analytical approaches**

Other analytical approaches to identify the economic impact of self-medication include the retrospective estimation of the cost of care for minor ailments\(^\text{38}\), as well as the estimation of the impact of a potential substitution of professional care for minor ailments by self-medication\(^\text{39}\).

A requirement for the estimation of the cost of care of minor ailments, for which self-medication could be indicated, is the definition and selection of the minor ailments examined. In a study by International Medical Statistics (IMS) for the Proprietary Association of Great Britain (trade association of manufacturers of over-the-counter medicines and food supplements in the United Kingdom), the selection of the minor ailments examined was based on the availability of non-prescription medicines targeting the conditions and the provisions of the ‘Minor Ailments Scheme’, a political initiative for the promotion of self-medication. The ‘IMS Disease Analyzer’, a longitudinal patient information collection system was used to link the diagnosis of minor ailments in GP practices to the subsequent treatment and relevant costs\(^\text{38}\). Accounting for
the time physicians spent for the treatment of minor ailments and the reimbursement costs of medicines prescribed for these conditions, the study estimated that the National Health Service incurred a cost of two billion British pounds that could have been avoided, should self-medication have been practiced instead.

The substitution approach was used in a study by AESGP on the economic and public health value of self-medication. Information from different European countries showed the level of prescribed medicines for the treatment of minor ailments reaching 15% of total prescriptions. Relying on evidence validating a substitution relationship between professional care and self-medication for minor ailments, the study used a conservative substitution rate of 5% in order to estimate the potential economic impact from a shift to self-medication. Accounting also for other benefits of self-medication, such as increased productivity and time gains due to avoiding travelling and waiting times, the study found annual savings from a 5% switch to self-medication on a European level exceeding 16 billion Euros. A similar approach was followed by the Belgian trade association of the pharmaceutical industry (pharma.be) for the development of a socio-econometric model for the estimation of the impact of a switch to self-medication for incidents of lower back pain in Belgium. The study results included an estimation of potential annual savings of 29.3 million Euros, or 168.6 million Euros over a five-year period.

**Health Technology Assessment (HTA)**

HTA is an interdisciplinary and multidimensional scientific approach to policy analysis. It is used to assess the clinical effectiveness of new products and practices, addressing a need to balance between rising costs and increasing patient expectations. The scope of HTA extends from healthcare systems, services and procedures to pharmaceutical products and medical devices. HTA examines the implications of the introduction of a new technology in terms of health outcomes and the utilization of resources. To this extent, an HTA process includes a comprehensive search and collection of clinical evidence and an economic evaluation, following the above described methods for the evidence-based analysis of clinical effectiveness and economic evaluation. Social, organisational and ethical issues are also integrated in the assessment process. The inclusion of social aspects aims at improving the effectiveness of the introduction of a new technology, by examining potential consequences beyond treatment outcomes. Examining organisational aspects reveals potential challenges associated with the implementation of the technology and assists resource allocation planning. As clinical evidence does not necessarily reflect the values of patients, consumers/patients are also involved in the HTA process and provide their perspective. The appraisal process needs to follow inclusive, explicit and reproducible methods. When properly conducted, it facilitates the internalization of information in the decision making process.

So far, no HTA has been reported for the evaluation of self-care. Discussions on the cooperation between agencies and standardization of parts of the HTA methodology become increasingly intense with projects such as EUnetHTA, at the same time that the importance of HTA is
recognized in legal documents, such as the EU Directive on the application of patients’ rights in cross-border healthcare. These developments indicate HTA gaining momentum in health policy decision-making, and this might also have implications for non-prescription medicines in the future.

DISCUSSION

Different methods may be used in order to assess and, when possible, quantify the actual impact of self-care or self-medication, thus allowing a direct comparison with alternative practices or interventions. As decision-making in health policy needs to be transparent and to address healthcare needs while corresponding to sociopolitical objectives, the ability to identify and measure the value of health practices is of great importance.

Self-care represents daily lifestyle choices and the first step an individual can take to address a health concern. Comparing self-care to the provision of medical care, it is apparent that the number of individuals practicing self-care is significantly higher than those requiring primary or secondary care services (Figure 4). At the same time, the resources required within a healthcare system for the provision of tertiary services are disproportionately high. Therefore, self-care not only presents a limited utilization of healthcare resources, but it can potentially contribute to decreasing the overall utilization of resources. Considering that the practice of self-care translates to the maintenance or improvement of health status, the potential for significant cost reductions from the prevention of disease and the transfer of care at an earlier stage becomes apparent.

Public health policy has an essential role to play in the realization of the full potential of self-care. As increased individual responsibility is not always a given within societies, policy makers need to carefully consider options for the incentivisation of individuals to take better care of themselves, or at least adopt policies that do not create barriers to self-care.
The communication of information and the education of the public are essential. Raising public awareness on the availability of self-medication solutions and educating consumers on their proper use are fundamental for self-care. The provision of educational material via the internet, social media, and materials found in health care provider offices, as well as retail facilities has greatly expanded the opportunities for consumers to access such information. The advertising of non-prescription products may also present an opportunity and have potential for the promotion of public health, as it initiates and informs the dialogue between consumers and healthcare professionals on lifestyle choices, diseases and treatments. Moreover in recent years the quality of medicine labels and inserted information leaflets have been enhanced through the actions of both the pharmaceutical industry and regulators. Interest, knowledge and confidence in self-care and its practice appear to have a mutually reinforcing relationship. Therefore, health policy measures could be directed at increasing the support to self-care, the training of individuals and the availability of information as means towards promoting an active stance on self-care\textsuperscript{53}.

CONCLUSION

Self-care undeniably plays a significant role in individual and public health and has a considerable impact on the healthcare environment and different stakeholders. Different methods may be used to measure the impact of self-care. These may concentrate on either the clinical or socioeconomic aspects of self-care, or may follow an integrated approach, incorporating other aspects as well. An example of such a multidimensional approach is HTA, which could potentially be used for self-medication and the assessment of non-prescription products, complementing existing sources of information.
It can be argued that a positive correlation exists between reliably assessing the impact of self-care and the prospect of promoting self-care practices on a political level and among consumers. Increasing confidence in self-care and drawing attention and interest to its practice are parts of the ‘virtuous circle’ that ensures more active and health-aware citizens. As individual responsibility for the improvement of health status and the prevention of disease increases, the circle is completed, with citizens becoming ever more interested and confident in the practice of self-care. Thus, the full potential of self-care may be realized, to the benefit both of the individual and public health.

Disclosure: The Association of the European Self-Medication Industry represents national trade associations and manufacturers of non-prescription medicines and consumer healthcare products in Europe

Correspondence to: Dr. George Yiangou, Association of the European Self-Medication Industry, 7 avenue de Tervuren, B-1040 Brussels, Belgium email: g.yiangou@aesgp.be

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