MAY BAUER
KONZEPTE IM GESUNDHEITSMARKT

The Socio-Economic Value of Self-Care in Ireland

A health economic analysis of the status quo and future potential.

Submitted by

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Table of contents

List of Figures

List of Tables

List of Abbreviations

AESGP	Association of the European Self-Care Industry (Association Européenne des Spécialités Pharmaceutiques Grand Public)
ATC	Anatomical Therapeutic Chemical
CPCS	Community Pharmacist Consultation Service
CSO	Central Statistics Office
GMS	General Medical Services
GP	General Practitioner
GSCF	Global Self-Care Federation
HIQA	Health Information and Quality Authority
HPRA	Health Products Regulatory Authority
HSE	Health Service Executive
IPHA	Irish Pharmaceutical Healthcare Association
IPU	Irish Pharmacy Union
MA	Minor Ailment
NPM	Non-Prescription Medicines
OECD	Organisation for Economic Co-operation and Development
OTC	Over-the-Counter
PSI	Pharmaceutical Society of Ireland
QALY	Quality-Adjusted Life Years
Rx	Prescription-Only Medicine

1. Introduction

1.1. Background

Healthcare systems all over Europe face increasingly scarce resources mainly due to demographic development and medical progress in terms of innovative medicines and procedures. [1] This situation also affects general practitioner (GP) care in many European countries due to high patient demand and heavy workloads. In Ireland, the healthcare system faces similar challenges, with increasing pressure on GP services and emergency departments due to a growing and ageing population. [2] In 2023, it was estimated that at least ten per cent of the population in Ireland was unable to register with a GP as their patient lists were at full capacity. [3] Against this background, it is essential to enhance self-care initiatives to support the efficient and sustainable use of resources among healthcare systems. This will ensure comprehensive and reliable access to healthcare and ease the burden on emergency departments and primary care. As over-the-counter (OTC) or non-prescription medicines (NPM) can typically be administered without prior medical consultation, this form of self-care, called self-medication, can save time and economic resources by reducing for example prescription-only medicines and GP visits. [4–6] Although self-care offers potential benefits for both individuals and society, it remains underpromoted today, and expanding self-care activities may be challenging. [7]

Several authors have defined the terms of self-care and self-medication so far. According to the Irish Pharmaceutical Healthcare Association (IPHA), “Self-care empowers people to manage important elements of their own and their loved ones’ lives. It includes taking actions to improve their health and wellbeing to prevent and decrease the likelihood of disease and to restore health after illness or injury.” [8] Further, self-care as a broad concept encompasses hygiene, nutrition, lifestyle, environmental factors, socioeconomic factors and self-medication. As one element of self-care, self-medication is the treatment of self-recognised minor ailments (MAs) by selecting and using approved medicinal products available without prescription. [9] The present investigation focuses exclusively on the health economic effects of self-medication according to this definition. Other measures practised in the context of self-care are not considered here. The reduction to self-medication offers significant advantages, especially with regard to quantification: The scope of the intervention can be clearly defined, since it refers especially to the use of registered medicines.[1] On the basis of the OTC medicine packages sold, a robust data basis is thus available for Ireland. In general, non-existence of risks, either direct or indirect, when used correctly and/or if utilised without medical supervision, is among the criteria for the status of non-prescription medicine according to the legal framework in the EU. [10] These criteria limit the status of non-prescription treatment to self-diagnosable and self-monitored conditions. Only certain therapeutic areas that meet the basic requirements for self-diagnosis, as well as certain groups of pharmaceutical preparations, suiting the criteria for non-prescription status, are discussed in the context of the present study. Whenever self-medication is mentioned in this text, the concept of self-medication as described before is always meant.

[1] The market research institute IQVIA does not provide market data for the Irish OTC market differentiated according to the criterion registered/unregistered. This is taken into account in our calculations by using appropriate assumptions.

The current state of research reveals that self-care and self-medication are a widely accepted and practiced form of primary care across Europe. [11–17] Studies demonstrate that between 51% and 94.9% of Europeans are willing to practice self-care as it allows greater involvement in the treatment process, faster access to treatment options for MAs and avoidance of long waiting times for GP visits. [12,18,19] A more evident shift in patient behaviour towards self-care has been observed since the outbreak of COVID-19 and it is facilitated by self-care initiatives and frameworks to increase health literacy. [20] In particular, self-care and self-medication have become increasingly popular in Ireland due to specific local factors such as increasing healthcare costs and long waiting times for GP appointments. A survey conducted by the IPHA indicated that 87% of Irish citizens are willing to consult a pharmacist and use OTC medicines to address MAs before considering a GP visit. [8] For the healthcare system and national economy, this suggests that there is an enhanced potential to leverage the value of self-care. Consequently, there is a necessity to generate new quantitative evidence on the value of self-medication within the context of the Irish healthcare system.

The subject of self-care and self-medication has also attracted increasing attention from a health economic and healthcare policy perspective, particularly over the last 10 years. From an economic point of view, the key interest lies in the fact that self-care generally eliminates the need to consult a GP, including obtaining prescriptions, or reduces the reliance on the public healthcare system in the first place. From the perspective of healthcare research, the focus lies on easy and rapid access to treatment (with OTC medicines) and the therapeutic benefits associated with this approach. [21]

In particular, the health economic effects were analysed in more detail in a number of countries and also globally (on behalf of the *GSCF* [22]) and at European level (on behalf of the *AESGP* [23]) by the authors of the present study. In the latter research project[2], model calculations were carried out for 30 countries grouped to 11 Country Clusters of comparable European countries. Ireland was also included in the calculation based on average values for the relevant group of countries (Finland, Ireland, and United Kingdom). The data obtained here provides important qualitative findings and also provides a good quantitative definition of the dimensions of the effects. Nevertheless, a more comprehensive technical and health policy discussion at the national level would benefit from the inclusion of country-specific data that is more detailed and accurately reflects the economic, legal and cultural circumstances prevailing in the country. In Ireland, these circumstances include not least the differences in healthcare funding structures, where there is a significant reliance on both public funding and private health insurance. [24] Other significant factors include the shortage of GPs, particularly in rural areas, a high prevalence of chronic diseases, and the government's policies aimed at promoting primary care and reducing hospital admissions. [25] Finally, cultural attitudes towards self-medication and the role of pharmacists in the healthcare system also play a crucial role in shaping healthcare practices in Ireland. [8]

The starting point of the present study and its methodological approach is the finding, documented by market data, that people in all European countries buy non-prescription medicines frequently and to a greater or lesser extent. [26] These are usually used to counteract certain self-treatable health conditions. This type of self-medication is seen by consumers as a highly important course of action for corresponding complaints or symptoms. Market research, particularly in the context of consumer surveys, indicates that a visit to a GP is often seen as the

[2] This is referred to briefly in the following text as the "AESGP study".

most obvious alternative to self-medication. [6,14,27] This is because the consultation of a GP also regularly leads to the use of a medicine if there is a need for treatment. This can be a medicine that is therapeutically similar or even identical to the preparation available for self-medication. In the case of a GP prescription, medicines are reimbursed by the national health care systems according to their specific legal situation. [5]

1.2. Objective of the Study

The objective of this research is to determine the economic and health care policy benefits of self-medication in Ireland, taking into account a comprehensive social perspective. This involves identifying all cost and benefit effects associated with the question of whether, in the case of a potentially self-treatable health condition, patients actually self-medicate with OTC medicines or whether they seek the advice of a GP. The cost and benefit effects are quantified and compared for both alternative treatment paths. Subsequently, qualitative and quantitative statements on the current benefits of self-medication are derived, considering the perspectives of various stakeholders, including patients, health insurers, the national economy, and society. In consideration of the potential for self-medication to develop in Ireland, quantitative statements will be made regarding the future socio-economic benefits of self-medication.

More specifically, the primary objective of this socio-economic study is to demonstrate the different monetary and time-related costs associated with the treatment of MAs in the case of a GP visit or self-medication with non-prescription medicines. Firstly, the cost savings in an individual case of using self-medication instead of visiting the GP (micro level) are used to quantify resource savings currently realised through self-medication on an aggregated level (macro level). Secondly, the cost savings in a given case are allocated to estimate prospective additional effects that can be achieved through an expansion of self-medication.

The secondary aim of the study is to enable health policy statements with regard to an efficient allocation of resources in outpatient care. The data and facts created by this research will allow a discussion based on scientific evidence on the value of self-medication with experts in the Irish healthcare system, patient organisations, payers and politicians. This discussion should subsequently facilitate the initiation of concrete regulatory and political measures that contribute to an increase in the acceptance and actual significance of self-medication in Ireland. In light of this context, the project outlined in this report additionally sets out to recommend practically realisable, legal and institutional measures and initiatives aimed at national decision-makers.

1.3. Methodological approach

The study is based on an empirical analysis and representation of patient behaviour using a decision tree, which allows for a comparison of the treatment paths ‘self-medication’ and ‘GP visit’, resulting in a cost-minimisation analysis. Based on this, a multistep model calculation is carried out with the objective of determining the corresponding costs at the micro- and macro-economic levels.

A structured literature review serves as the basis for this investigation. Where available, data from existing studies on the economic and social impact of self-medication in Ireland and on consumer attitudes and behaviour with regard to self-medication are also identified.

Methodologically, the research project is based on preliminary work – in particular the health economic model developed by *May and Bauer* on behalf of the AESGP. [28] The socio-economic parameters used in the AESGP study by *May und Bauer* (for example GP labour costs, loss of productivity of a patient and medicines' cost) will be determined on a country-specific basis for Ireland. On this basis, the direct and indirect effects of self-medication can be recorded at the national level, for example:

- Costs for the healthcare system, for example medicines' cost and medical expenditure (GP costs),
- Time costs and opportunity costs for GPs and patients,
- Productivity losses for the national economy due to absenteeism (time for GP visit and sick leave).

In order to carry out a health and socio-economic comparison of the treatment paths of 'self-medication' vs. 'GP visit' in the case of a self-treatable health condition, these alternative options for the patient are mapped in a decision-analytical model (decision tree).

The previously collected socio-economic data is incorporated into a health economic model based on this decision tree. As a result, the model provides the cost and benefit effects of self-medication as currently realised in Ireland (*status quo*). Corresponding growth scenarios are developed to determine the future potential of self-medication. As in the AESGP study, these figures are based on the proportion of treatment cases that are, in principle, capable of self-medication and are currently still being treated by GPs in Ireland. Based on these findings, three scenarios are drawn up and analysed, each of which depicts varying extents of potential for health policy measures to enhance the significance of self-medication.

The following steps are required to be carried out in order to fulfil the objectives outlined in the study:

a. Health economic calculations

Comprehensive literature research and determination of country-specific data on the key parameters and the most important basic parameters according to the AESGP model. Conceptual adaptation of the AESGP model to Irish conditions and feeding the AESGP model with Irish data on the key parameters and the most important basic parameters. Derivation of detailed Ireland-specific statements on the effects of self-care from the perspectives of patients, the national health care system and the Irish economy.

b. Health political recommendations

Evaluation and interpretation of the health policy findings of the AESGP study with a special focus on Ireland and the legal, economic and cultural framework conditions. Derivation of fundamental health policy conclusions in the Irish context and identification of central starting points for a policy to promote self-care in Ireland.

The model structure allows for the calculation of various scenarios with regard to the temporal dimension and further restrictive modelling assumptions, as described above.

2. The concept of self-care in the context of the Irish healthcare system

The role and significance that self-care can play in a country from a healthcare and economic perspective is very closely linked to the framework conditions of the local healthcare system. [29,30] For this reason, the legal and organisational framework of the Irish healthcare system is outlined below to the extent that this is necessary in the light of the topic of self-care. A range of health-related data is then presented, which is also relevant in order to assess self-medication from a health and socio-economic perspective. Finally, this chapter looks at the realities and specifics of the OTC market and self-medication in Ireland.

2.1. Structural framework conditions of the healthcare system

2.1.1. Structure of the healthcare system

In Ireland, the healthcare system's structure ensures that patients receive coordinated care across primary and secondary services, hospital care, and pharmacies. The 'Primary Care Team' system is the cornerstone of primary care in Ireland. The Primary Care Team is a collective of health professionals who collaborate closely to address the healthcare needs of the community. Thus, GPs, Public Health Nurses and other services provided through Local Health Offices act as the first point of contact for patients and as gatekeepers to secondary care. [31] Within this system, GPs operate as private practitioners, typically running their own practices, and provide a range of services including preventive care, management of chronic diseases, and referrals to specialists. GP services are financed through a combination of out-of-pocket (OOP) payments by patients, state reimbursements for eligible patients (such as those with a Medical Card or a GP Visit Card). Private insurances offer insured persons to claim back a certain percentage of their OOP payments depending on their insurance policy.[32] Costs per GP visit range from approximately € 45 to 65, with an average of € 52. [33] The Health Services Executive (HSE), responsible for delivering public health and social care services, contracts GPs to offer free or subsidized care to holders of the Medical Card and GP Visit Card. [34]

Ireland's inpatient care system includes a mix of public and private hospitals. Public hospitals are primarily funded through taxation and provide services at no or reduced cost to eligible patients. They offer surgical procedures, maternity services, and specialized treatments after referral from a GP. [35] Additionally, they offer outpatient emergency care, critical for the immediate care of acute conditions or life-threatening emergencies. For non-Medical Cardholders, attendance of an emergency department also typically requires GP referral. If no GP referral is provided, an admission fee of € 100 is charged. [36] Due to difficulties in accessing GP services and delays in outpatient appointments, many patients use these emergency departments for minor health issues. [37] Private hospitals provide care that is paid for directly by patients or covered by private health insurance, often offering shorter waiting times and additional amenities compared to public hospitals. [35]

Pharmacies additionally add critical value to the Irish healthcare system. In 2016, approximately two million pharmacy visits were recorded in Ireland, representing the highest number of healthcare professional consultations per month. Pharmacists were therefore the most accessed healthcare professionals in Ireland. Pharmacies provide essential services, including medication dispensing, health advice, and support for self-care, such as guidance on minor

ailments and OTC medicines. They are funded through a mix of state reimbursements for prescription charges for eligible patients and direct out-of-pocket payments for prescriptions and OTC medicines..Again, private health insurance allows to claim back certain OOP payments.. Additionally, pharmacies support public health initiatives, such as vaccination programs and chronic disease management, thereby playing a crucial role in adding significant value to the healthcare system. [38]

2.1.2. Relevant institutions in the healthcare sector

The governance of healthcare and pharmaceutical products in Ireland is supported by a network of essential regulatory bodies. The Ministry of Health, led by the Minister of Health, and the Government manage healthcare, with the Ministry of Health overseeing health policy, planning, and regulation. [39] Key regulatory bodies include the Health Information and Quality Authority (HIQA), which ensures standards in health and social care services through regulation and inspection, and the Pharmaceutical Society of Ireland (PSI), which regulates pharmacy practices to ensure safe and effective service delivery, including the licensing of pharmacists and the regulation of pharmacy practice. [40,41] Additionally, the Health Products Regulatory Authority (HPRA) is responsible for the authorization and regulation of medicines, ensuring that medicines and healthcare products available in Ireland meet the required standards of safety, quality, and efficacy. [42]

Complementing these regulatory bodies are organizations that represent industry interests and manage public access to healthcare. The IPHA, for instance, represents the interests of the research-based pharmaceutical industry, advocating policies that improve access to innovative medicines and highlighting the industry's contribution to public health. [43] Similarly, the Irish Pharmacy Union (IPU) represents community pharmacists, advocating for the pharmacy sector and ensuring that policies support the effective delivery of pharmacy services to the public. [44] Meanwhile, the General Medical Services (GMS) provides a crucial interface between healthcare providers and the public, playing a significant role in managing access to medical services and prescription medicines for eligible patients, thereby supporting equitable healthcare delivery across the country. [45]

2.1.3. Type and financing of the public healthcare system

The Irish healthcare system, a hybrid model integrating both public and private services, is designed to ensure comprehensive healthcare access for all residents. The HSE is the central body responsible for delivering public health and social care services in Ireland. Established in 2005, the HSE is primarily funded through taxation, which covers approximately 77% of healthcare expenditure. This ensures that most healthcare services are available to residents at little or no cost. Additional funding comes from private health insurance, contributing 12%, and out-of-pocket payments by individuals, which provide 11% towards covering the remaining costs. The HSE acts both as a purchaser and provider of healthcare services, utilizing a network of public hospitals and community health organizations as well as contracting services from private GPs, hospitals, and other private providers. [46]

2.1.4. Entitlement to benefits

Entitlement to healthcare benefits in Ireland varies based on income, age, and health conditions. The primary category of eligibility includes the Medical Card, which provides free access to GP services, hospital care, prescribed medicines (including certain non-prescription medicines which can be prescribed by a GP), and certain other health services. Eligibility for the

Medical Card is either means-tested or based on specific health conditions and age. A GP Visit Card offers free GP visits for those who do not qualify for a full Medical Card but meet criteria such as age, long-term conditions, or a less strict means test. As of 2023, 30.5% of the Irish population was entitled to the Medical Card, and 11.9% held the GP Visit Card. The secondary category of eligibility includes the remaining 57.6% of Irish residents – those who do not hold a Medical Card or GP Visit Card – and entitles them to subsidized hospital care with required co-payments. Residents can apply for additional support through schemes such as the Long-Term Illness Scheme, which provides free medication and medical appliances for patients with specified chronic conditions, and the Drugs Payment Scheme, which caps the amount that individuals and families pay for approved prescribed medicines at € 80 each month [47]. The Long-Term Illness Scheme covers expenses for 6.4% of the population, while benefits of the Drugs Payment Scheme are claimed by 34% of Irish residents. [2,15,48,49]

Private health insurance plays a significant role in the Irish healthcare system, providing expedited access to treatments and elective procedures, which can have long waiting times in the public system. Insurers cover costs for care in both public and private facilities, offering plans that include inpatient and outpatient services, as well as additional benefits such as dental and optical care. [48] The private health insurance market is competitive, with different providers offering a range of plans tailored to different needs and budgets. Providers include Irish Life Health, Laya Healthcare, VHI Healthcare and HSF Health Plan. [50] In 2023, 47% of Irish residents had some sort of private health insurance. [49]

Overall, the Irish healthcare system is a complex mix of public and private services, aiming to provide comprehensive care to its population while addressing challenges such as capacity constraints and access to primary care. Despite the system's objective of guaranteeing accessibility and quality through a variety of funding mechanisms and regulatory bodies, patients may encounter difficulties in navigating and comprehending their entitlements. Consequently, there is an increasing emphasis on self-medication and the role of pharmacies in providing accessible healthcare advice and OTC medicines, which can help alleviate some of the pressure on primary and secondary healthcare services.

2.2. Healthcare-relevant data and key figures

2.2.1. Demographic overview

Ireland's population has been steadily growing, reaching approximately 5.15 million people as of the 2022 Census. This represents an 8% growth compared to the 2016 Census. [51] The average age of the population is 38.8 years, and the share of population over the age of 65 is at 15.1%. [2,49] This indicates a relatively young demographic structure in comparison to other European countries. The average life expectancy in Ireland is 82.4 years; women have a life expectancy of 84.3 years, while men have a life expectancy of 80.5 years. [49] A significant proportion of the population – over 43% – is concentrated in Dublin and the Mid-East region surrounding Dublin. [52]

Ireland has a GDP per capita of € 82,100, significantly higher than the EU average of € 35,219. The relative poverty rate in Ireland stands at 14.0%, lower than the EU average of 16.5%. Additionally, Ireland holds a relatively low unemployment rate of 4.5%, compared to the EU average of 6.2%. Approximately 40% of the population suffers from long-term health conditions, while lifestyle factors such as smoking and obesity remain prevalent. Currently, 18% of adults smoke, and 60% are classified as either overweight or obese. [53,54]

2.2.2. Healthcare workforce and infrastructure

The healthcare workforce in Ireland is characterized by a relatively low number of practicing physicians and a higher-than-average number of nurses. In February 2024, there were approximately 20,000 practicing physicians in Ireland, including around 6,800 GPs. [55] Accordingly, the ratio of GPs per 1,000 inhabitants lies at 1.3. This is regarded as a relatively low figure in comparison to international standards. [52] The ratio of physicians in all specialist areas is at 4.06 per 1,000 inhabitants which is slightly below the European average of 4.28 per 1,000 inhabitants. [56] In contrast, the number of nurses is considered high, with 12.2 nurses per 1,000 inhabitants. [52] Furthermore, Ireland has a considerable number of pharmacists, with over 14,000 people directly employed in this sector as of 2023. [57] The distribution of healthcare professionals across urban and rural areas remains a critical issue, with higher concentrations in urban centers like Dublin. [53]

Ireland's healthcare infrastructure comprises a mix of public and private hospitals and facilities. As of 2023, the country had 86 hospitals, 77.9% of which were publicly administered. The total number of hospital inpatient beds in 2022 was 15,009, reflecting a 3% increase from the previous year. These beds are distributed across public, private, and psychiatric hospitals. [55] The infrastructure also includes a significant number of pharmacies, with 1,910 pharmacies operational in 2023. [57] Accordingly, there are 36 pharmacies per 100,000 inhabitants which is above the EU average of 32 pharmacies per 100,000 inhabitants. [58]

2.2.3. Health outcomes

Ireland enjoys a high life expectancy, influenced by factors such as robust healthcare services, effective public health initiatives, and favourable socioeconomic conditions. According to the ‘Healthy Ireland Survey 2023’, 80% of respondents reported being in good or very good health, while only 4% reported being in bad or very bad health. The survey also highlighted significant usage of healthcare services, with 76% of people visiting a GP in the past year and substantial engagement with other health services such as consultants, emergency departments, and outpatient clinics. [37] However, the prevalence of chronic diseases remains a significant challenge, with lifestyle-related conditions such as diabetes, cardiovascular diseases, and respiratory conditions being common. Public health policies continue to focus on preventive care, management of chronic diseases, and improving overall health outcomes through initiatives like the Sláintecare reform program, which aims to enhance healthcare integration and access at the regional level. [53]

2.3. OTC market and self-medication

The OTC market and self-medication practices in Ireland are dependent on various factors, such as the availability of OTC medicines, patient behaviour, and the healthcare infrastructure. While Ireland has a relatively small number of OTC medicines available compared to other European countries (currently 95), [59] these medicines play a crucial role in promoting self-care among the population. The availability of OTC medicines is seen to directly influence the extent to which self-medication is practiced – with a higher number of available OTC medicines increasing the options for self-care. [60,61]

In Ireland, OTC medicines can be purchased from pharmacy and non-pharmacy retailers. While pharmacies are the most trusted point of access for these medications, non-pharmacy retailers that include health stores, supermarkets, and petrol stations make them widely accessible to the general public. [62] The highest turnover from OTC medicines, categorized by

distinct medical indications, comes from painkillers, remedies for cold and cough symptoms, vitamins and minerals, as well as medication for digestive and skin issues. However, the highest turnover is generated by a broader category of miscellaneous OTC medicines, which includes a wide range of other medical indications. [63]

In the past, the IPU and the IPHA have played an important role in promoting self-care in Ireland. In January 2018, these organizations published a report titled 'Self-care – Taking Charge of Your Health', which highlighted the findings of a market research survey conducted by the former Irish agency 'Behaviour & Attitudes' (now: Ipsos) in 2017. According to the survey, 92% of respondents expressed a desire for increased self-care. The research also showed that pharmacies represent a central element in the self-care process, with more than three times as many individuals visiting pharmacies compared to those visiting physicians on a monthly basis (2,210,000 vs. 667,000). Many survey respondents have a particularly positive perception of pharmacies, and thus have a strong preference to shop in the pharmacy to prevent them from having to seek help from their GP. These findings demonstrate that although a substantial number of individuals may be living with a continuing or enduring medical condition, they are still much more likely to interact regularly with pharmacists than with their GP. Further looking at those who made an OTC medicines purchase, trust and relationship with the pharmacist turned out to be fundamental drivers of satisfaction, leading to patients making self-care purchases that effectively address their own medical needs and requirements. Almost 9 out of 10 pharmacy customers indicate that the quality of medical advice they receive at their regular pharmacy was perceived as either very good (60%) or good (29%). Overall, the research provided evidence to indicate that the Irish population is very receptive to the concept of self-care and perceives pharmacists as important and trusted partners in the management of their own health. [15]

Further supporting the move towards self-care, the IPU and IPHA have advocated for expanding the role of pharmacists, particularly through the development of a MA scheme. This proposed scheme would allow Medical Card (GMS) patients to receive treatment for MAs directly and free of charge from their community pharmacist, without needing to visit a GP for a prescription. As of now, to receive medicines for specified MAs that can be treated by pharmacists from the agreed 'List of GMS Reimbursable Items', entitled patients must nonetheless visit their GP first to receive a prescription for these medicines. Public opinion research, carried out on behalf of the IPU, indicates overwhelming public support for this initiative, as it is seen to empower pharmacists to prescribe certain medications for MAs – increasing access to necessary treatments for patients and reducing the burden on GPs. [15]

An additional public survey conducted in 2023 by the IPHA revealed that 84% of respondents feel capable of treating minor health conditions themselves, with 82% preferring to do so rather than visiting a GP. Additionally, 87% would choose to visit a pharmacy for MAs before considering a GP appointment. These findings demonstrate a high willingness among the Irish population to engage in self-care and self-medication, driven by the lower costs associated with self-medication and the potential to alleviate pressure on the healthcare system. However, the survey also identified a lack of convenient access to necessary treatments and medications as the most significant barrier to effective self-care. [8]

3. Health and socio-economic dimensions of self-care

The following chapter provides a general overview of the microeconomic and macroeconomic aspects of self-medication. In the first step, the individual behaviour of people with self-treatable health disorders is presented in a decision-analytical manner using a conventional decision tree. This is followed by an outline of the economic and health care effects that may be relevant as a result of individual decision-making behaviour. This basic theoretical consideration serves as the basis for quantifying the specific effects of self-medication within the Irish healthcare system in Chapter 4.

3.1. Individual decision-making situation and patient journey for self-treatable health disorders

If a minor health disorder occurs, such as a cold, muscle aches or gastrointestinal complaints, there are generally a number of different behavioural options available to those affected. Patients may choose to wait and do nothing (nihilism), try home remedies, self-administer OTC medicines, visit a pharmacy, or consult a GP.

As the persons concerned generally have the sole and full decision-making authority with regard to the options mentioned, they will normally choose the option that minimises their effort for a given result or leads to the best possible result for a given input, in line with the economic theory of homo economicus. In economic terms, consumers optimise their expected utility for a given level of uncertainty. [64]

The cost side will always suggest the lowest possible intervention (waiting instead of self-treatment / self-treatment instead of consulting a GP), while the expected benefit can sometimes favour a higher-level intervention (for example consulting a GP). Very often, it will be easier for the patient to estimate the financial and time costs involved than the expected benefit. This is due to the specific nature and complexity of the disease as well as the existing information asymmetries and deficits of the medical layperson compared to the healthcare professionals. [64] In particular, a patient's decision to forego a visit to the GP and rely on self-diagnosis and the resulting treatment decisions can be associated with many potential uncertainties and be the decisive reason for the individual to decide against acting on their own responsibility. This decision therefore depends on the level of information available to the person concerned and also to a large extent on the accessibility or availability of other sources of information and the patient's assessment of their reliability and trustworthiness.

Market research studies and demoscopic surveys have been conducted in Ireland and other European countries in the context of self-medication and MAs. [8,15,65] These provide far-reaching insights into the real behavioural patterns of people, which result from the decision-making situations theoretically described above. The central findings of this data review form the basis for the decision tree presented below. That means, the decision tree shows the options which, on the basis of empirical and demoscopic data, have proven to be relevant courses of action for patients with minor health disorders in the real-world setting. For the model calculation on the economic effects of self-medication, the frequency with which these decision paths are chosen in practice on an aggregated level is determined on the basis of market data and consumer surveys. For the economic impact analysis of self-medication, the frequency of each decision-making path is determined by aggregating market data and consumer surveys. Implicitly, each individual decision of a patient or GP in this decision tree can be traced back

to an expected utility model. However, for the purpose of this study it is sufficient to focus on the actual results of decision-making behaviour at the aggregate level.

In the event of a minor health problem, it is first of all up to the patient to decide between "wait and see", practicing self-care, or visiting a GP to get better. On the second decision level, the patient's alternatives in the case of self-care, as well as the treatment options offered by GPs are presented. In case of a GP consultation, three basic options are included. In the path of self-care there are two decision options for the patients on the second level. Either they chose home remedies or self-medication. The latter is also an option, if home remedies do not bring the desired improvement of symptoms. For the case that the patient chooses to consult a GP, the GP can prescribe a prescription-only (Rx) or a non-prescription medicine which can both be reimbursed by national health care systems in certain cases. The second option includes all forms of medicine recommendation that result in the patients having to pay for their medication out of pocket. The third option is for the GP to forego the use of medication, which is here referred to as "Non-Medication Therapy" (see Figure 1). Patients who consult a GP in the event of a minor health problem cannot predict in advance which of the three alternative courses of action the GP will choose. However, they can sometimes anticipate this based on past experiences and in some cases also influence it themselves. For their part, patients can make the decision to see a GP dependent on their expectations of what the GP will do. Every path is associated with certain amounts of direct and indirect costs as well as in certain more or less beneficial patient outcomes. How patients actually behave on an aggregated level in this decision-making situation is known from consumer surveys and evaluations of GP contacts and OTC purchases (see Chapter 4.1, "Data needs and assumptions") and can therefore be taken into account accordingly in this model.

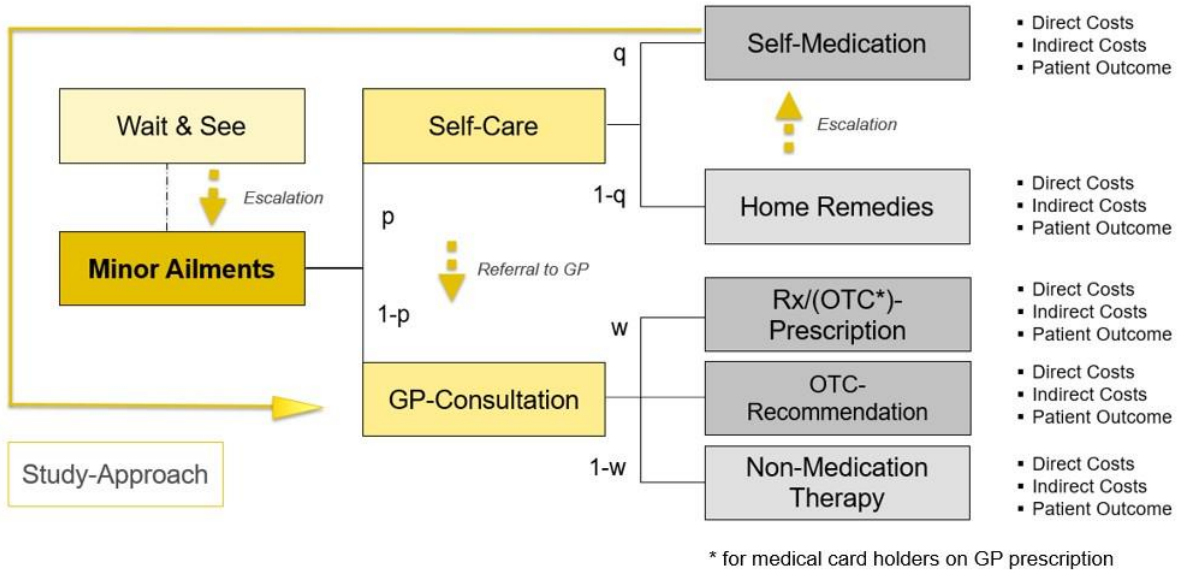

Figure 1: Decision tree in case of a minor ailment

The path with the greatest practical significance in the case of MAs is, according to the above-mentioned data, self-care. Within self-care, the use of non-prescription medicines (self-medication) plays a significant role which is documented by the number of OTC medicines sold throughout Europe. [26] Specifically, in relation to this option, a consultation with a GP is often seen as an alternative from the patient's point of view which in nine out of ten cases also results in the use of medicines and often also of OTC medicines. When consumers make a choice

between the available treatment pathways, they often decide on the basis of their personal experience. A decision in favour of self-medication is typically based on the experience that symptomatic complaints in the course of MAs can be successfully treated with non-prescription medicines. Moreover, from the consumer's point of view, the low-threshold access to this form of care is regularly relevant for the decision. [5,66] To be precise, it is primarily the transaction costs associated with a GP consultation in the form of travel and waiting times that can support the decision in favour of self-treatment with non-prescription medicines.

Based on the assumption of a typical and ordinary course of treatment, the possibility of potential complications or treatment failure is not explicitly presented in the decision tree. Implicitly, however, the possibility of returning to the starting point and thereby initiating a new decision-making process, which might result in a different outcome, is not entirely excluded. Consequently, in this model, the decision in favour of a certain therapy was equated with the (successful) endpoint of the decision tree.

In principle, each path in the decision tree is associated with a certain benefit and costs, which can be evaluated and compared in a cost-benefit analysis. Nevertheless, the entire study is limited to a cost-minimisation analysis. Accordingly, this study does not examine or consider whether the expected benefit of self-medication (in an average individual case) is equivalent to that of medical treatment for a minor health disorder. Meanwhile, this simplification appears to be permissible for several reasons. Firstly, because the consideration was limited to mild and regularly self-limiting health disorders. By definition, such health disorders as the common cold or minor stomach complaints disappear again after a few days even without treatment. [6] The medicinal products available without prescription in Europe (OTC medicines) are suitable, effective and safe according to their official authorisation for the self-responsible treatment of just such complaints. [10] Only areas of application and groups of preparations that meet the basic requirements of self-diagnosis and substances that meet all the criteria for non-prescription status are discussed in the context of the present study. In addition, consumers decide in favour of self-medication on the basis of their own benefit assessment. They regularly do this based on a broad knowledge of experience in dealing with self-treatable condition, which is either gained individually or passed on in the family. [67–70] By deciding in favour of self-medication, it becomes obvious that the expected benefit in the specific case is considered at least equal to that of a visit to the GP.

With reference to the described relationship between the two therapy alternatives and the premises derived from it, calculations are carried out below (Chapter 4) on the cost differences between self-medication and GP visits at the individual and aggregate level.

3.2. Health care effects and health benefits

The health-related effects, referred to as outcomes in the decision tree, are the decisive factor in assessing the value of self-medication, in addition to cost effects. In relation to an individual case of self-medication, the patient-relevant health benefit can be seen directly in the symptomatic or curative effect of an OTC medicine used. Information on the strength of these effects can be provided in particular by clinical trials or non-interventional studies (for example observational studies).

Of no less importance for the health impact of self-medication are the indirect effects that the low-threshold availability of OTC medicines may have on patient behaviour. [71] It is clear that the legal prescription status of medicines, as well as local availability and economic or time barriers, can in many cases have a direct influence on the behaviour of consumers in relation

to their health condition. The low-threshold access to an OTC medicine which makes self-medication possible can be decisive for the treatment or medicine therapy of a health condition to take place at all. [67–70] Similarly, this observation can apply to the preventive use of medications, for example in the case of vaccines. [72]

This fundamental decision of the patient or consumer between preventive or curative treatment and therapeutic nihilism (this refers to the decision not to undergo therapy, equivalent to wait & see) is highly relevant from the perspective of health services research and pharmacoeconomics. Without the use of medicines, there are no positive effects on the patient's health-related quality of life that could be expected from treatment. In addition, nihilism with regard to treatment or prevention can have further negative effects, for example in the form of aggravation, chronification or the development of health disorders. From this perspective, it is immediately apparent that the potential care effects associated with the treatment rate influenced by self-medication also form an important interface for the risk assessment of potential Rx-to-OTC switches. The medical risks associated with not switching (for example insufficient treatment options) are just as relevant from a health economic perspective as the risks associated with switching (for example increased incidence of inappropriate use or medication errors). In both cases, outcomes may be worsened and direct costs may be incurred through avoidable utilisation of the healthcare system.

With regard to indirect costs and economically relevant aspects, both the supply effects associated with the switch from prescription to OTC medicines, i.e. the quality of life effects, and the consequential risks of non-treatment are relevant. In the case of health-related quality of life effects, this includes work and productivity losses that are directly attributable to the health impairment caused by the disease. [73] The consequential risks of non-treatment relate to new complications or complaints as a result of non-treatment or lack of prevention (for example low vaccination rates), which also need to be considered in terms of their indirect costs.

As in other areas of medical care, the impact of self-medication can be measured, for example in terms of quality-adjusted life years (QALYs). [74]

Figure 2 below summarises the multiple effects that can result from access to care:

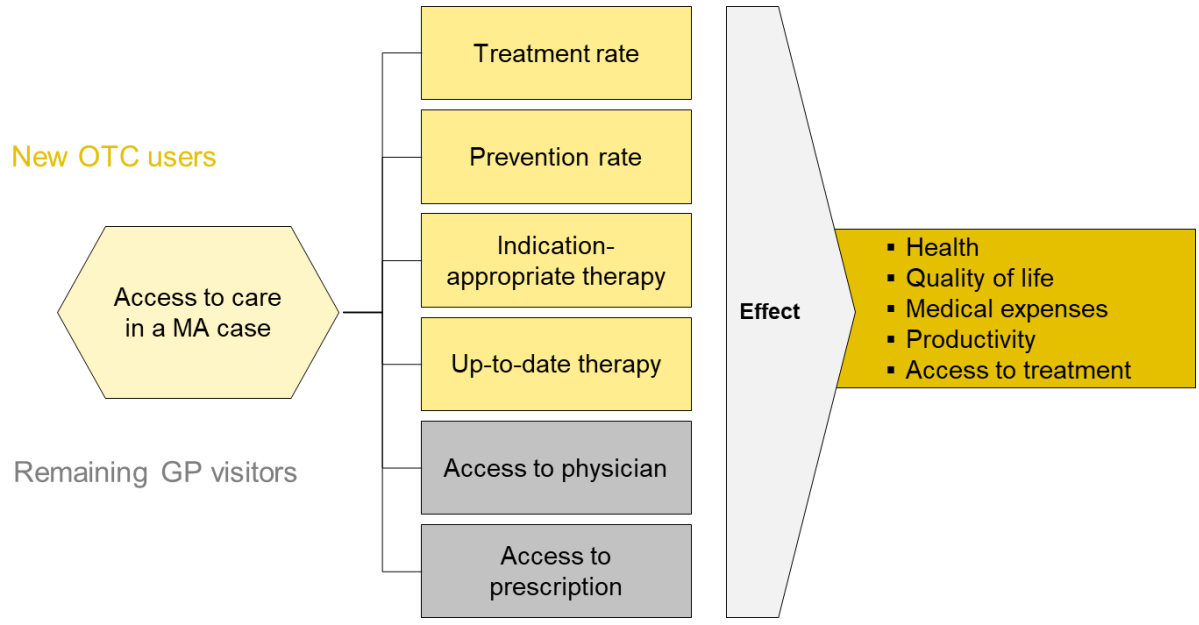

Figure 2: Multiple Effects of access to healthcare [5]

As can be seen in Figure 2, access to healthcare is responsible for various effects. New OTC users have an influence on the treatment and prevention rate as well as indication-appropriate and up-to-date therapy. Next to the new OTC users, there naturally are patients who continue to see a GP as their disease requires. They have faster and easier access to a prescription and the appropriate therapy, because the GP practices are less crowded by people with minor ailments. The general access to care due to the remaining GP visitors, meaning those who really need a GP treatment, and the new OTC users is associated with positive effects on health, quality of life, productivity, access to treatment and medical expenses.

3.3. Economic effects at micro and macro level

Based on the presentation of self-medication outcomes in the previous section, it can be suggested that for certain minor health disorders, both visiting a GP and responsibly using OTC medicines are equally effective options for addressing these health problems. However, the associated treatment costs are very different for the two treatment pathways. In every case in which an individual patient decides to self-medicate, the burden on the public health system is reduced, since in particular, costs for a GP visit and for prescribed medication are avoided if the patient is a Cardholder. These costs, which are borne by the relevant payers in the national healthcare system, are direct costs. If self-medication is carried out, there are also direct costs in the form of costs for OTC medicines. These are usually borne by the patients themselves. The costs of both therapy paths also differ at the level of the national economies. Visiting a GP during working hours may lead to workplace absenteeism and reduction in productivity, especially if the visits result in the issuance of sick notes. These costs are known as indirect costs and are usually borne by the economy or society at large.

The cost differences between self-medicating and visiting a GP, that arise in individual cases, can be multiplied by the number of currently practiced self-medication cases in order to determine the aggregated cost difference at the national level. It is also possible to model scenarios to estimate the additional cost effects that would arise if more individuals opted for self-medication with OTC medicines instead of consulting a GP.

4. Health economic modelling of the individual and collective value of self-care

In the following sections, the development and implementation of the health economic model for calculating the social and economic effects of self-care in Ireland are assessed. To this end, the principles of the model-theoretical approach (structure) as well as the data needs and assumptions are explained first (Chapter 4.1). In the next step, the decision-theoretical approach and a concrete decision tree as shown in Chapter 3.1 (Figure 1) for consumer behaviour are used to calculate the cost and benefit effects of self-care in the status quo and the development potential and efficiency reserves of self-care in the future (Chapters 4.2 and 4.3). This calculation model initially relates to the individual case. The methodological procedure for deriving aggregated data from this calculation model for Ireland in total is also described. Subsequently, the corresponding calculations on the current importance of self-care are carried out. Finally, the results of the calculations are evaluated and subjected to a critical discussion (Chapter 4.4).

4.1. Model structure and assumptions

In the following, the basic procedure of the analysis and the calculation steps of the model are outlined as depicted in Figure 3. The description of the model is followed by an explanation of where and on which basis data and assumptions were used in the model calculation.

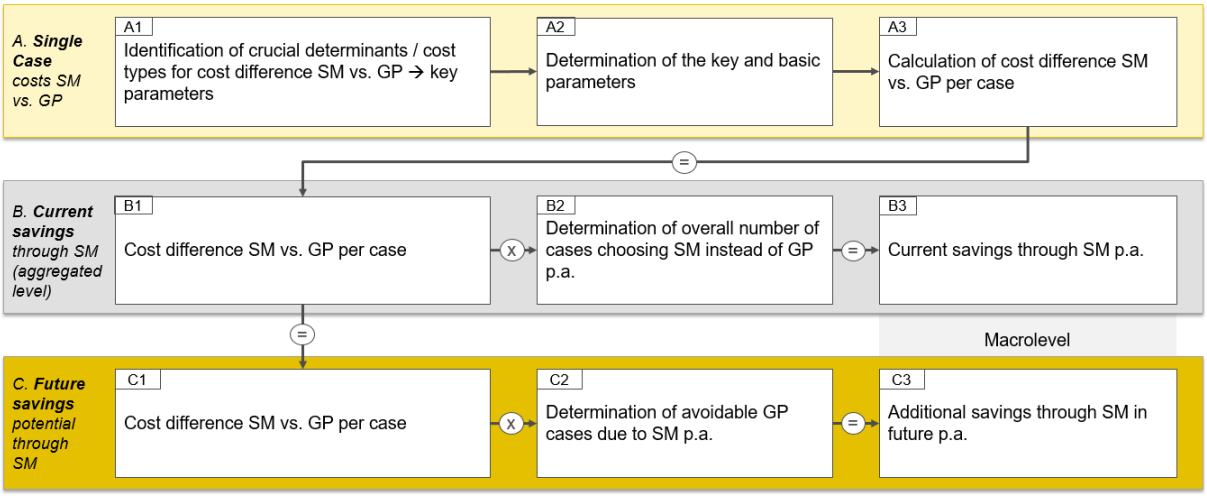

Figure 3: Methodological steps and result levels of the model calculation

The figure shows the three different result levels A, B and C of the model on the left side. On the first level, the average costs of a single treatment case are determined for the paths of self-medication and a visit to the GP. In this way, the cost difference between the two treatment paths is determined. These calculations are carried out at the average case of a typical minor ailment in Ireland.

The results of the first level are thus cost differences per case between the treatment paths GP vs. self-medication. These results of level A (A3) are used as a starting point for further calculations on the second level (B) and also on the third level (C). On the second level, the savings currently achieved in Ireland through self-medication are calculated by multiplying the cost difference per case with the corresponding number of relevant cases on a national level. The multiplier used for this is the number of self-treatment cases that currently take place instead of a GP visit. The starting point for this calculation is the number of OTC packs purchased directly by consumers as a substitute for an otherwise required GP visit. In other words, if these OTC medicines would not have been available without a prescription, a GP visit would have taken place. The results of level B are the total savings that are currently achieved through the practised self-treatment cases in Ireland. In the presentation of the results, this is referred to as the Status Quo.

The third level of the model calculation (C) aims to determine which further saving effects would be achievable through self-medication in the future, if an additional share of GP visits due to MAs taking place today were replaced by self-medication. For this purpose, it is calculated which direct and indirect costs could be avoided if a certain proportion of patients who consult a GP today in cases of self-treatable ailments were to treat themselves with non-prescription medicines in the future. Determinants considered for direct costs were treatment costs at the GP practice and medicine costs for Rx and/or OTC medicines per case. For the calculation of indirect costs, costs of lost working time due to travel, waiting and treatment times at the GP practice and / or pharmacy as well as days of absence from work due to sick leave were calculated. In addition, patient time invested in traveling, waiting and if necessary treatment are

shown as intangible costs. This calculation also takes the savings per self-medication case from level A as a starting point. The multiplier in this scenario is the number of additional GP cases in Ireland that could be avoided through self-medication. These result from the expansion potential of self-care in Ireland as explained in section *Data needs and assumptions*. Through this arithmetic step the additional achievable saving potentials for Ireland are calculated if more people self-medicate for minor health disorders in the future. In the presentation of the results, this level C is referred to as the *Future Scenario.* For this scenario, a sensitivity analysis is carried out allowing deviations of +/- three percentage points.

The outlined analysis and calculation steps thus begin at the microlevel with the individual decision situation of a single person facing the choice of a treatment path for his or her minor health disorder (decision tree). The transition from the microlevel to the macrolevel takes place on the second and third result levels (B and C) respectively at the transition from B2 to B3 and from C2 to C3.

Data needs and assumptions

In the course of the outlined calculation steps, a large number of data and some assumptions are required. The nature and origin of these data and the rationale behind the assumptions used are summarised as follows. In the entire first level of the model calculation (A), the basic data is derived from research in statistical databases and publications. In particular, data were sought that provide information on the direct and indirect costs of a case of treatment in Ireland. Accordingly, data on all costs associated with self-medication, i.e. in particular OTC prices and time costs, for example for visits to the pharmacy, were determined. Likewise, the costs for GP examinations, prescribed medicines and economic costs, especially for absences from work, were determined at the level of the Irish healthcare system and economy. On this data basis, the cost difference between a case of treatment at the GP versus in self-medication was determined. These statistics-based calculation results are also the starting point for the calculations on the second (B) and third result level (C).

The search for suitable data was conducted primarily via search engines and specifically on statistical databases as the Irish Central Statistics Office (CSO), Eurostat and Organisation for Economic Co-operation and Development (OECD) database. The search terms used corresponded to the data searched for in the respective case. In order to obtain a database that reflects Irish conditions as accurately as possible, country-specific data from the relevant Irish statistical publications were used as a matter of preference. Here, in particular, data from official sources (for example authorities or organizations) were used for the data selection and again efforts were made to ensure that the data were as recent as possible. Where Irish data was not available, data from European databases or international sources were also taken into account (for example Eurostat, OECD). Moreover, exclusively for this project market data was obtained from IQVIA on sales volume and turnover of Rx and OTC medicines as well as different surveys on the behaviour of consumers.

For reasons of accessibility of data and manageability of data gaps, a focus on certain key parameters was necessary. These were identified to have a significant impact on the cost difference of self-medication and GP visits in Ireland. The key parameters were identified to be different cost types, namely GP costs (treatment costs per case), medicine costs and labour costs respectively costs for absence from labour (measured on the basis of average costs per working hour). On the basis of the literature reviewed and previous health economic studies on the economics of self-medication, these could be identified as the most influential costs with regard to the cost difference between the treatment paths of GP versus self-medication. The

costs for non-prescription medicines and prescribed medicines in the respective areas of treatment are obtained from the statistics of the market research institute IQVIA. Relevant statistical publications from national sources are used to determine the costs for GP visits and lost working hours (see supplementary material for more details). European average values for all countries or a selection of countries that are particularly comparable with Ireland according to the AESGP study were used for a number of other cost types that account for the difference between the GP and self-medication treatment pathways.[3] These so-called basic parameters are costs that are quantitatively less significant and also relatively similar in all European countries under consideration. This applies less to monetary factors, but rather to time costs such as travel costs (for example travel time to GP visit). However, these were specified to Ireland where possible. Using this data, the direct and indirect effects of self-medication were calculated based on productivity losses due to absenteeism from work, the opportunity costs for GPs and patients, medicines' cost, and medical expenditure.

At the second and third level of the model calculation (B and C), values based on assumptions were used in each case for the box in the second column (B2 and C2). At level B, this concerns the number of self-medication cases that actually replace a GP visit. Basically, the data on the use of OTC and Rx medicines that are included in the calculations are based on the market statistics from IQVIA that were provided for this study. Additional insights into the extent to which these OTC medicines were used instead of a possible visit to the GP could be drawn from demoscopic and empirical surveys on consumer behaviour. That means, for deriving the number of self-medication cases, only a certain share of the current number of sold OTC packages documented by market statistics is used as a multiplier. It is for example taken into account that not all OTC medicines sold are used in treatment situations that would alternatively have caused a GP consultation (for example very minor complaints or prevention). In addition, a further part of the OTC packs is deducted due to the fact that for a subgroup of current OTC purchasers, the alternative is not to visit a GP but to do nothing. Moreover, it was taken into account that in one case of a MA, it is not necessarily given that only one pack is used or that it is completely used up. The surveys used mainly refer to the preferences and actual behaviour patterns of consumers in dealing with minor health disorders. From these market data and surveys it could be derived beforehand that self-medication and GP visits are considered as substitutes in certain MA cases by a significant part of the consumers. The relevant frequencies in the decision tree which the respective pathways (see Figure 1) are chosen with can be derived from these data and surveys. [23]

At level C of the model calculation, certain assumptions had to be made in order to calculate which so far unexploited potential still exists in Ireland to replace a part of the currently occurring GP visits with self-medication. Estimates and assumptions on these questions have to be derived on a country-specific basis, since the significance of self-responsibility in health in general and the actual use of self-medication in particular differ greatly within Europe. A central role with regard to the development potential of self-medication is played by the number of medicines available without prescription in the country. It is evident that certain health disorders can only be treated by self-medication if non-prescription medicines are available for the corresponding indication in a country. The latter is determined using a database on the OTC status of medicines in Ireland. [75] As the availability of OTC medicines is obviously a necessary condition for self-medication to be practised, this condition is not yet sufficient since the

[3] In the AESGP study, Ireland is categorised in a country cluster together with Finland and the United Kingdom on the basis of the data available.

population must also be willing to use these preparations. [29,30,76] Against this background, the estimation of the development potential is based firstly on how many over-the-counter medicines are available or how many more Rx-to-OTC switches are still possible and secondly on the extent to which the given potentials for self-treatment are currently already being used by the population. In a country like Ireland, where only a comparatively limited number of substances or preparations is available without prescription, there is thus still relatively high growth potential for the concept of self-medication. In addition, the country-specific situation with regard to the incentives that favour or inhibit a decision to self-medicate at the individual level in turn has an effect on the actual uptake or use of the available OTC medicines and the significance of self-medication as a therapy option. This assessment was made on the basis of the following four criteria: self-medication packs sold per capita p.a. [26], market share of self-medication in the pharmaceutical market [26], GP contacts per capita p.a. [77] and willingness to practice self-care among the population [78]. In short, the fewer substances are available without a prescription and the less the existing substances are already used for self-treatment today, the higher the potential for future growth in self-medication by substituting GP visits in the respective country. By determining the corresponding country figures, the development potentials of self-medication in Ireland can be extrapolated.

By combining the two determinants availability and degree of utilisation of self-medication based on the four criteria mentioned above, countries in which the parameters are both low, both high or mixed are grouped. For these groups of European countries different growth potentials for self-medication are determined. This growth potential is based on a potential expansion of self-medication as an alternative to consulting a GP. The assumptions used for this forecast are quantitatively based on market developments documented after Rx-to-OTC switches and after changes in the incentive situation for consumer decisions to self-medicate (for example through legislative measures) in different countries. [5,11–14,76,79–81]

The model inputs included data from for example Irish Central Statistics Office, EuroStat, Organisation for Economic Co-operation and Development Statistics (OECD.Stat) and World Bank as well as real-world datasets from IQVIA. These were supplemented with evidence from the literature search. Finally, sensitivity analyses were carried out.

The Irish healthcare system is more complex and heterogeneous in terms of health coverage compared to other countries. For this reason, when analysing costs from the patient's perspective and from the perspective of the healthcare system, it is necessary to differentiate between those who are in receipt of financial assistance from the State for health related costs and those who are not. Figure 4 shows the differentiation used in this paper. Total includes the entire Irish population. It was taken into account that 42.45% of the population are in receipt of financial assistance from the state through free GP care or a medical card, referred here as Cardholders and 59% who do not, or non-Cardholders. Cardholders include GP visit Cardholders (11.94%) and medical Cardholders (30.51%). [2] For Cardholders, the costs of a GP visit are covered. In addition, medical Cardholders only have to pay a prescription charge for Rx medicines, while GP visit card and non-Cardholders have to pay the full amount. The non-Cardholders comprise the part of the population that does not have a GP visit card or medical card. The costs from different perspectives (patient, GP, healthcare system and national economy) were calculated at all three levels (A, B, C) for total, Cardholders and non-Cardholders.

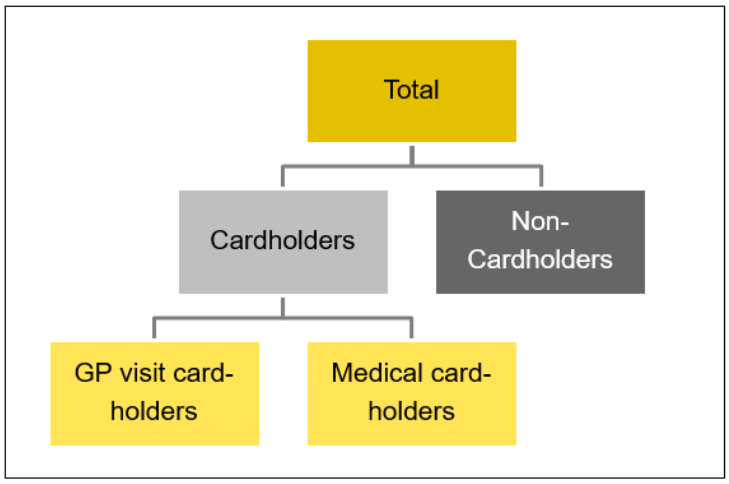

Figure 4: Differentiation of health insurance status

Economic consideration of self-payment in the model calculation

In the context of the health economic comparison of different treatment pathways, it is not important for the calculation of direct and indirect costs who bears these costs. In particular, this means that it is irrelevant for the cost comparison whether and which parts of the costs are borne by the public healthcare system or covered by patients' co-payments or prescription charge. This also applies in principle to the specific case of self-medication, the costs of which are compared here with those of medical treatment.

However, as soon as the cost comparison is made from the perspectives of the various stakeholders, the attribution to the respective payer naturally plays a decisive role. If, for example, prescription charges are incurred for prescribed medicines or co-payments for visits to the GP, these are to be categorised from the patient's perspective in the case of non-Cardholders as costs to be borne personally and therefore also relevant to the decision. In this context, the regulation in force in Ireland plays a special role, according to which insured persons who are not exempt as holders of a card must bear the costs of GP visits in full themselves, which can also be methodically interpreted as a co-payment of 100%. If the patients concerned do not take out private insurance to cover these costs, the costs are obviously attributable to the patients. However, a significant proportion of Irish people do in fact have such a private insurance, which reimburses services not covered by the national healthcare system to varying degrees depending on the tariff. As these companies calculate according to private-sector criteria, it can be assumed from an actuarial point of view that the tariffs and premium payments on offer lead to average per capita income that covers the insured benefits and also the administrative costs of the company. In relation to the entire group of insured persons, this implies that, on average over a period of time, the expected insurance payouts per insured person correspond to the individual premium payment. In other words, this means that a statistically representative policyholder pays on average as much in premium volume as he receives in reimbursements from the insurance company. In the present case, this means that there is an actuarial equivalence between the expected expenditure for GP consultations on the one hand and the corresponding premium payments on the other.

As a result of these considerations, it is appropriate to assume in the health economic model calculations that the expenditure for GP consultations must be recognised as costs on the part of the patient, even if they are covered by private supplementary insurance. At the same time,

however, the behavioural incentives with regard to the willingness to self-medicate differ depending on the insured status. While an uninsured patient includes the costs of a visit to the GP in their decision-making process, these costs represent sunk costs[4] for the insured patient, which as such are not rationally relevant to the decision. [64]

4.2. Cost and benefit effects in a single case

In the first step of the health economic model calculation (level A), the economic effects of a single case of a minor ailment treated by self-medication are compared with the cost of a GP visit in the same case. In both cases, direct cost (medical cost), indirect cost (economic cost) and intangible cost as well as benefits (for example leisure time gained) are considered.[5] These types of costs are recorded in monetary and, if necessary, real units (time, quantity). On the basis of the calculated costs and effects, an allocation is also made to the perspectives of the patient, the GP, the national healthcare system and the national economy. This reveals at which level the actors are affected and the amount of the individual cost types that have to be borne. Implicitly, this perspective-related analysis also demonstrates how the individual patients are economically affected by a change between GP consultations and self-medication as well as which incentive structures are therefore given for the individual decision behaviour.

The calculations are based on the respective data on resource consumption in the case of self-medication and in the case of a GP consultation. This data is found directly or derived indirectly from the targeted country-specific research on Ireland. Selected market data on turnover and sales of Rx and OTC markets in Ireland were supplied by IQVIA. [83,84] The health economic model developed by the authors is fed with data from the sources mentioned above.

In the health economic model calculation, the real-life conditions are represented as simplified as possible and as differentiated as necessary to achieve the most comprehensive and accurate picture available for Ireland. In connection with those cost types that were previously classified as key parameters (Chapter 4.1), this means, among other things, the following:

- **Cost of GP consultations:** The calculations are based on consultations of GPs for each minor ailment case. It is taken into account that, in reality, there is occasionally more than one GP contact in such a case. The GP time used is composed of the actual patient contact, an administrative time proportionally attributable per case and friction costs between the individual patient contacts. The monetary valuation of the GP time is based on the average fee value of a minute of GP time in the Irish healthcare system. In this way, the actual value of resource consumption is captured. The calculations consider that in Ireland it is possible to have a GP visit card or medical card (Cardholders), which cover the costs of GP consultations. On the other hand, there are people who do not have one of those cards (non-Cardholders) and therefore have to pay for the consultations themselves. The GP consultation costs were calculated for both variants. In addition, the Cardholders and non-Cardholders were combined for the total.

[4] In finance, sunk costs are considered expenses that have already been incurred, are irreversible, and cannot be recovered. [82]

[5] Intangible costs and effects are also important in this context. By their nature, these cannot be measured or valued, but are an important factor for consumers in particular when deciding for or against self-treatment. Such factors, which include, for example, patients' lost leisure time or a shortened pain episode, are addressed in the context of the presentation of results. This approach corresponds to an economic view based on the so-called opportunity cost approach.

- **Cost of prescribed medicines:** The prescription quantity and the average cost of prescribed medicines in the case of a GP consultation are calculated based on IQVIA data using a shopping basket especially created for this purpose. [84] In the shopping basket, selected indication groups are considered according to the Anatomical Therapeutic Chemical (ATC) classification. ATC codes relevant for prescription in the case of minor ailments are taken into account. The average Rx price was calculated by using the list prices and units sold. Moreover, a pharmacy dispensing fee of € 5 was added on top of the price. The cost of prescribed medicines lie at patients and the HSE, but the share differs greatly depending on the fact whether they are Cardholders or non-Cardholders. It was taken into account that medical Cardholders only need to pay a certain contribution. For GP visit Cardholders and non-Cardholders the costs of prescribed medicines are out-of-pocket costs. The costs of prescribed medicines were calculated for both variants. In addition, the Cardholders and non-Cardholders were combined for the total.
- **Cost of OTC medicines:** The average prices of OTC medicines for Ireland are calculated using IQVIA data on turnover and sales. [83] This value corresponds to the study approach, which is based on a statistically representative case in self-medication across all indications. In line with actual consumer behaviour, the calculation of self-medication cost per case of a minor ailment takes into account that on average less than one OTC pack is used per treatment case (0.6 packs). With regard to consumer travel costs, it is also considered that the number of OTC medicines purchased during a representative pharmacy visit is on average higher than one pack. This means that separate time and travel costs are not associated with each individual OTC pack.
- **Cost of lost working hours:** Work absences and productivity losses related to minor ailments initially occur when employed individuals visit a GP practice during their working hours. Furthermore, the GP visit may result in clinically unnecessary sick leave with corresponding days of lost working time for the patient. The time lost directly due to GP visits is taken into account based on the proportion of the employed working population and the proportion of those GP visits that take place during working hours. On the contrary, GP visits taking place during leisure time result in (private) time costs for the patient but not in productivity losses. The number of avoidable sick leave days is considered using a conservative assumption based on expert estimations and including the average number of sick leave days in Ireland. The monetary assessment of productivity losses due to GP visits and sick leave is based on public data on work absence cost in Ireland.

Further data, underlying assumptions and calculation steps are displayed in the Appendix.

As previously mentioned, in addition to the costs of the consultation itself, a visit to a GP usually incurs costs for the prescription of Rx medicines. Furthermore, it is not uncommon for OTC medicines to be recommended by a GP. Although these can be prescribed in individual countries, reimbursement does not usually take place throughout Europe. There is in general no reimbursement of OTC medicines by the state in Ireland except for certain non-prescription items which are reimbursable if they are prescribed by a physician. As the figure is low, these are not further taken into account. However, the OTC costs incurred are lower in the case of a GP visit because it is only used in addition to the potentially prescribed medicine(s). In concrete terms, surveys have shown that around one-third of patients buy an OTC medicine as an additional product and not as a substitute for prescription-only medicine. Accordingly, the value of 30% is included in the calculations. Prescriptions, however, are more frequent during a GP consultation, namely in 80% of cases. [85]

If, in contrast, a patient chooses self-medication instead of a visit to the GP, the references and, if applicable, the assumptions derived therefrom change with regard to the number of OTC packs purchased and the number of cases of minor ailments that can be treated with one pack. Thus, on average, it can be assumed that 0.6 OTC packs are consumed per treatment case. Costs for GP treatment and Rx medicines are omitted due to the choice of treatment path.

The results of the direct costs for the treatment of one minor ailment case in Ireland are shown in the table below. Of particular relevance is the difference between the cost of a GP visit and self-medication, as it represents the potential savings in direct costs per minor ailment case.

Table 1: Cost effects in a single case scenario in Ireland

Cost Effects (self-care vs GP) in a Single Minor Ailment Case		
Direct Cost	Medication cost OTC (EUR)	3.62
	Medication cost Rx (EUR)	- 10.46
	Treatment cost GP (EUR)	- 59.08
Indirect Cost	Time cost GP (min)	- 24.08
	Treatment-related work loss (EUR)	- 3.95
	Treatment-related work loss (min)	- 7.95
	Absence from work due to sick leave (EUR)	- 5.96
	Absence from work due to sick leave (min)	- 12.00
Intangible Cost	Time cost patient (min)	- 77.35

It can be seen that in a single minor ailment case the total direct costs for choosing a GP visit are significantly higher than those for choosing the treatment of a minor ailment through self-medication. The total costs for a GP treatment is at EUR 59.08. In addition, there are costs for Rx medication amounting to EUR 10.46. The direct costs for treatment by self-medication are at EUR 3.62. These amounts also represent the potential savings in direct costs.

Besides direct costs, indirect and intangible costs are also of interest in the context of an examination of saving potentials by self-care. All cost types are included in the following tables which display them from certain perspectives, namely patient, GP, national healthcare system/health insurance and national economy. The values display the cost difference between the GP treatment and the self-care pathways. The calculation method of direct and indirect monetary costs is analogous to the calculation of direct costs explained in the previous chapter. Again, the shares of Cardholders (medical / GP) and non-Cardholders are considered.

Here, costs are allocated to the stakeholders who actually incur the costs. Indirect costs occur as the time cost of GPs and absences from work affecting the national economy. The time cost of patients is valued as an intangible cost as their personal leisure time is affected.

The time cost for patients includes their travel and waiting times for either a combined GP and pharmacy visit or a pharmacy visit only. GP time cost refers to average treatment times plus time spent on administrative tasks. From the national economy perspective, time spent at a GP practice during working time, absences with a sick leave certificate, and the corresponding work losses are of relevance.

For interpreting the cost differences between GP treatment and self-care in the tables below, a positive figure indicates that the cost for the self-care pathway is higher than for the GP

treatment pathway. As opposed to that, negative figures reflect the savings realisable by self-care per minor ailment case compared to GP treatment. Concerning the national healthcare system perspective, an average discount was applied in order to account that the healthcare insurances receive potential rebates for a GP visit of the Cardholders.

The following table shows the costs incurred in perspective, taking into account the non-/Cardholders in the total presentation.

Table 2: Cost effects in a single case scenario from different stakeholder perspectives in Ireland - total

Cost Effects (self-care vs GP) in a Single Minor Ailment Case from Different Perspectives – Total		
Patient Perspective	Medication cost OTC (EUR)	3.62
	Medication cost Rx (prescription charge) (EUR)	- 7.63
	GP cost (co-payment) (EUR)	- 34.00
	Total cost savings (EUR)	**- 38.01**
	Time cost patient (min)	- 77.35
GP Perspective	Time cost GP (min)	- 24.08
National Healthcare System Perspective	Treatment cost GP (EUR)	- 23.07
	Medication cost Rx (EUR)	- 2.84
	Total cost savings (EUR)	**- 25.91**
National Economy Perspective	Absence from work due to sick leave (EUR)	- 5.96
	Treatment-related work loss (EUR)	- 3.95
	Total cost savings (EUR)	**- 9.92**
	Absence from work due to sick leave (min)	- 12.00
	Treatment-related work loss (min)	- 7.95
	Total time savings (min)	**-19.95**

The total monetary cost for self-care are significantly lower for patients compared to a GP visit (EUR 38.01). Moreover, there are time savings from the patients' perspective of more than one and a quarter hours (77.35 minutes) in travel, waiting and treatment time. For GPs, it is obvious that they save time per patient for each patient that is not treated by them as this saved time can be allocated to more severe cases that require a GP treatment or can bring a personal relief of time pressure and fewer working hours. This is of particular interest as research shows that GP resources are scarce all over Europe. As the remuneration of GPs depends on various factors, it is impossible to put a concrete value on this and thus to point out certain influences on their income by treating fewer patients. From the National Healthcare System perspective, money for GP visits and Rx medication costs is saved by practising self-care (EUR 25.91). About 7.95 minutes can be attributed saved from treatment-related lost working time and additional twelve minutes of sick leave can be avoided per self-medication case. This corresponds to an economic value of EUR 9.92 which can be saved for the national economy per self-medication case.

The subsequent tables show the effects particularly for Cardholders (including GP and medical card) and non-Cardholders.

Table 3: Cost effects in a single case scenario from different stakeholder perspectives in Ireland – Cardholders

Cost Effects (self-care vs GP) in a Single Minor Ailment Case from Different Perspectives - Cardholders		
Patient Perspective	Medication cost OTC (EUR)	3.62
	Medication cost Rx (prescription charge) (EUR)	-3.77
	GP cost (co-payment) (EUR)	0.00
	Total cost savings (EUR)	**- 0.16**
	Time cost patient (min)	- 77.35
GP Perspective	Time cost GP (min)	- 24.08
National Healthcare System Perspective	Treatment cost GP (EUR)	- 54.35
	Medication cost Rx (EUR)	- 6.69
	Total cost savings (EUR)	**- 61.04**
National Economy Perspective	Absence from work due to sick leave (EUR)	- 5.96
	Treatment-related work loss (EUR)	- 3.95
	Total cost savings (EUR)	**- 9.92**
	Absence from work due to sick leave (min)	- 12.00
	Treatment-related work loss (min)	- 7.95
	Total time savings (min)	**- 19.95**

Table 4: Cost effects in a single case scenario from different stakeholder perspectives in Ireland – Non-Cardholders

Cost Effects (self-care vs GP) in a Single Minor Ailment Case from Different Perspectives – Non-Cardholders		
Patient Perspective	Medication cost OTC (EUR)	3.62
	Medication cost Rx (EUR)	- 10.46
	GP cost (EUR)	- 59.08
	Total cost savings (EUR)	**- 65.93**
	Time cost patient (min)	- 77.35
GP Perspective	Time cost GP (min)	- 24.08
National Healthcare System Perspective	Treatment cost GP (EUR)	0
	Medication cost Rx (EUR)	0
	Total cost savings (EUR)	**0**
National Economy Perspective	Absence from work due to sick leave (EUR)	- 5.96
	Treatment-related work loss (EUR)	- 3.95
	Total cost savings (EUR)	**- 9.92**
	Absence from work due to sick leave (min)	- 12.00
	Treatment-related work loss (min)	- 7.95
	Total time savings (min)	**- 19.95**

While the perspectives of GPs and the national economy remain unaffected, the monetary cost effects for patients and the healthcare system are changing. In the case of Cardholders, the costs of practicing self-medication are slightly higher than if a GP is consulted. However, it can be assumed that (from the perspective of most patients) this is largely outweighed by the large amount of time saved. In contrast, non-Cardholders who bear all treatment costs themselves save considerably on the treatment of their minor ailments with self-medication. In contrast, the savings for non-Cardholders are significantly higher at EUR 65.93 if they decide to use self-medication, as in this case they do not have to bear the costs of the GP visit and the Rx medication. However, the national healthcare system does not bear the costs of treatment or medication for this patient group under any circumstances.

The following figure allows a visual comparison of the direct cost effects from the total national perspective as well as from the split situation of Card- and non-Cardholders.

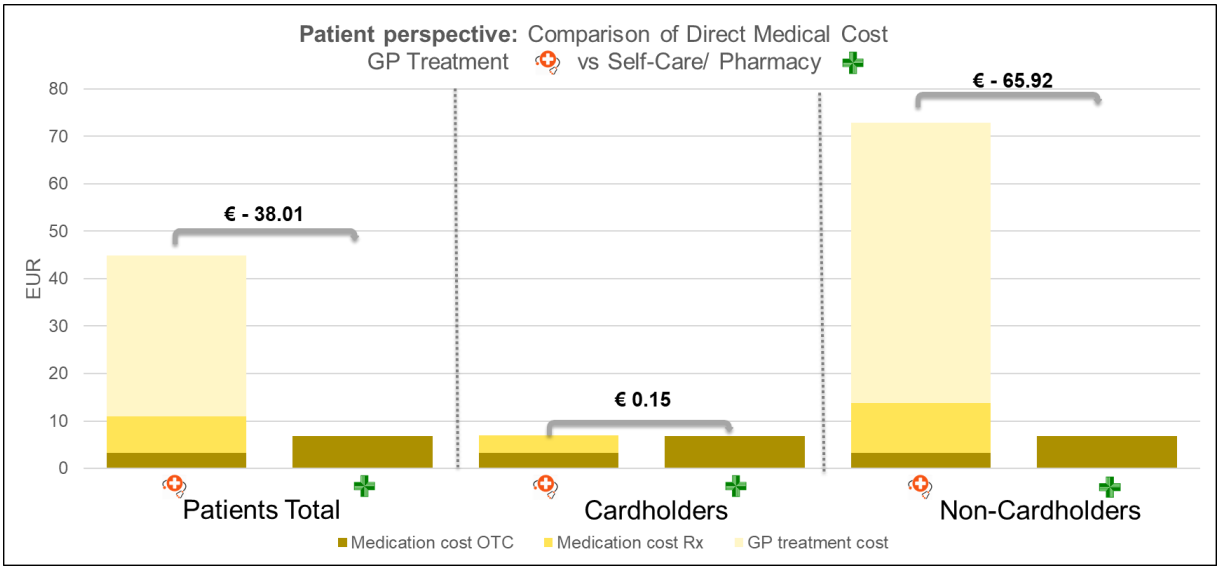

Figure 5: Comparison of direct medical cost (self-care vs. GP) from patient perspective

This figure highlights once more the beneficial monetary effects of self-medicating minor ailments in total and especially for non-Cardholders while Cardholders have slightly higher costs.

Overall, looking at the existing monetary and time effects in individual cases of minor ailments already raises the prospect that they have a significant impact on the healthcare systems at the aggregated level. This takes into account the number of cases already treated by self-medication, i.e. the status quo, as the next chapter will reveal.

4.3. Aggregated cost and benefit effects in the status quo

For Ireland as well as for all eleven Country Clusters in the AESGP-Study, the total direct costs for choosing a general practitioner (GP) visit are significantly higher than those for choosing self-medication to treat a minor ailment (MA). [28] Moreover, indirect costs (time costs of GPs, treatment-related work loss, sick leave-related work absenteeism) and intangible costs are of interest when examining saving potentials achievable through responsible self-medication. Aggregating these values leads to the total economic effects at the national level of Ireland shown in Table 5 and Table 6.

Again, the tables demonstrate the cost difference between the GP treatment and the self-medication pathways. When interpreting these cost differences, positive figures indicate higher costs for self-medication while negative figures reflect savings achievable through self-medication. The substitution volume reflects the number of MAs treated by self-medication which substitute GP visits and thus leads to current savings. It is based on the number of packs of OTC medicines sold and the share of patients which would have visited a GP if self-medication was not available.[6]

[6] See Chapter 4.1 for details.

Table 5: Cost effects in the status quo in Ireland

Cost Effects (self-care vs GP) in the Status Quo Scenario		
	Number of MAs treated by SM per year	**19.14 m**
Direct Cost	Medication cost OTC (EUR)	69.22 m
	Medication cost Rx (EUR)	- 200.24 m
	Treatment cost GP (EUR)	- 1,130.51 m
Indirect Cost	Time cost GP (min)	- 460.84 m
	Treatment-related work loss (EUR)	- 75.61 m
	Treatment-related work loss (min)	- 152.14 m
	Absence from work due to sick leave (EUR)	- 114.13 m
	Absence from work due to sick leave (min)	- 229.63 m
Intangible Cost	Time cost patient (min)	- 1,480.16 m

Table 6: Cost effects from different stakeholder perspectives in Ireland – total

Cost Effects (self-care vs GP) from Different Perspectives - Total		
	Number of MAs treated by SM per year	**19.14 m**
Patient Perspective	Medication cost OTC (EUR)	69.22 m
	Medication cost Rx (prescription charge) (EUR)	- 145.92 m
	GP cost (co-payment) (EUR)	- 650.61 m
	Total cost savings (EUR)	**- 727.30 m**
	Time cost patient (min)	- 1,480.16 m
GP Perspective	Time cost GP (min)	- 460.84 m
National Healthcare System Perspective	Treatment cost GP (EUR)	- 441.51 m
	Medication cost Rx (EUR)	- 54.32 m
	Total cost savings (EUR)	**- 495.83 m**
National Economy Perspective	Absence from work due to sick leave (EUR)	- 114.13 m
	Treatment-related work loss (EUR)	- 75.61 m
	Total cost savings (EUR)	**- 189.74 m**
	Absence from work due to sick leave (min)	- 229.63 m
	Treatment-related work loss (min)	- 152.14 m
	Total time saving (min)	**- 381.76 m**

In the status quo, around 19.14 million cases of MAs treated by self-medication in Ireland per year are substituting a GP visit, generating savings for healthcare system and society. The calculations show considerable savings for all types of costs and from all considered perspectives. Only the patients' medicines' cost is higher in the case of self-medication, but this is offset by the significantly higher savings from GP visits. In addition, there are substantial individual time savings. In case of worsening symptoms or the occurrence of undesirable side effects, patients are advised to consult a GP. Due to the fact that the approval and the decision for the OTC status ensure in principle that the substances and application areas are suitable for self-medication and can be treated without a GP, it is assumed that this case rarely occurs. For this reason, no reliable data on this is available and this aspect was thus not integrated into the calculations.

On an aggregated level, the table above shows that Irish consumers are initially charged with EUR 69.22 million per year through self-care with OTC medicines to the extent practised today. However, this must be contrasted with the fact that at the same time expenditure for Rx

medicines amounting to EUR 145.92 million and costs for GP visits amounting to EUR 650.61 million are saved on the part of the patients through self-medication and thus foregoing a visit to the GP. In total, EUR 727.30 million can be saved annually by choosing to treat minor ailments through self-medication. The corresponding time saved by these self-care cases for GPs amounts to around 460.84 million minutes or around 7.68 million hours per year. Under the given conditions of scarcity and capacity shortages, this results in immediate medical benefits for those patients who urgently need a GP. Moreover, the transaction costs for patients who see a GP, particularly those arising from waiting times, are reduced.

Focusing on the time saved by GPs due to the treatment of MAs with self-medication as mentioned above, the time saved in the status quo would have a significant impact on the time resources required for patient treatment if self-medication was no longer available at all. Would this time have to be used for the treatment of MAs, about 3,398 more GPs (plus of 50%) would be required in the status quo. Alternatively, each GP working in Ireland would have to work approx. 4.8 hours longer per day, if self-medication was not available.[7] This is illustrated graphically below.

Figure 6: Need of resources if no self-medication was available in the status quo

The subsequent tables show the effects divided to Cardholders (including GP and medical card) and non-Cardholders.

Table 7: Cost effects from different stakeholder perspectives in Ireland – Cardholders

Cost Effects (self-care vs GP) from Different Perspectives – Cardholders		
	Number of MAs treated by SM per year	**8.12 m**
Patient Perspective	Medication cost OTC (EUR)	29.39 m
	Medication cost Rx (prescription charge) (EUR)	- 30.66 m
	GP cost (co-payment) (EUR)	0 m
	Total cost savings (EUR)	**- 1.27 m**
	Time cost patient (min)	- 628.33 m
GP Perspective	Time cost GP (min)	- 195.63 m
National Healthcare System Perspective	Treatment cost GP (EUR)	- 441.51 m
	Medication cost Rx (EUR)	- 54.34 m
	Total cost savings (EUR)	**- 495.85 m**
National Economy Perspective	Absence from work due to sick leave (EUR)	- 48.45 m
	Treatment-related work loss (EUR)	- 32.10 m
	Total cost savings (EUR)	**- 80.54 m**
	Absence from work due to sick leave (min)	- 97.48 m
	Treatment-related work loss (min)	- 64.58 m
	Total time savings (EUR)	**- 162.06 m**

[7] This figure is relatively high by European standards due to the relatively low density of physicians in Ireland.

Table 8: Cost effects from different stakeholder perspectives in Ireland – Non-Cardholders

Cost Effects (self-care vs GP) from Different Perspectives – Non-Cardholders		
	Number of MAs treated by SM per year	**11.01 m**
Patient Perspective	Medication cost OTC (EUR)	39.84 m
	Medication cost Rx (EUR)	- 115.24 m
	GP cost (EUR)	- 650.61 m
	Total cost savings (EUR)	**- 726.01 m**
	Time cost patient (min)	- 851.83 m
GP Perspective	Time cost GP (min)	- 265.21 m
National Healthcare System Perspective	Treatment cost GP (EUR)	0 m
	Medication cost Rx (EUR)	0 m
	Total cost savings (EUR)	**0 m**
National Economy Perspective	Absence from work due to sick leave (EUR)	- 65.68 m
	Treatment-related work loss (EUR)	- 43.51 m
	Total cost savings (EUR)	**- 109.19 m**
	Absence from work due to sick leave (min)	- 132.15 m
	Treatment-related work loss (min)	- 87.55 m
	Total time savings (min)	**- 219.71 m**

Again, if there is a subdivision into Card- and non-Cardholders, the results from the perspectives of GPs and the national economy remain unaffected. Thus, only the monetary cost effects for patients and the healthcare system are changing. As Rx medication and GP treatment are at least largely covered by the state, Cardholders incur higher costs in the case of self-medication (EUR 1.27 million), as previously shown for individual cases. Resulting from this, cost savings for the national healthcare system are quite high if no self-medication is carried out (EUR 495.85 million). In contrast, self-medication allows non-Cardholders to realise savings of EUR 726.01 million incurred in particular for GP treatment. As the national healthcare system does not cover the costs of medicines or GP treatment in the case of non-Cardholders, there are no savings for this group of patients, regardless of the choice of treatment path (GP / self-medication).

From the results in Table 6 to Table 8 it can be deduced that every Euro invested in self-medication can result in savings for the national economy and / or the healthcare system, summarized as economy (Figure 7). Again, the amount of healthcare system savings depends on whether the total national perspective or the groups of Card- and non-Cardholders are considered.

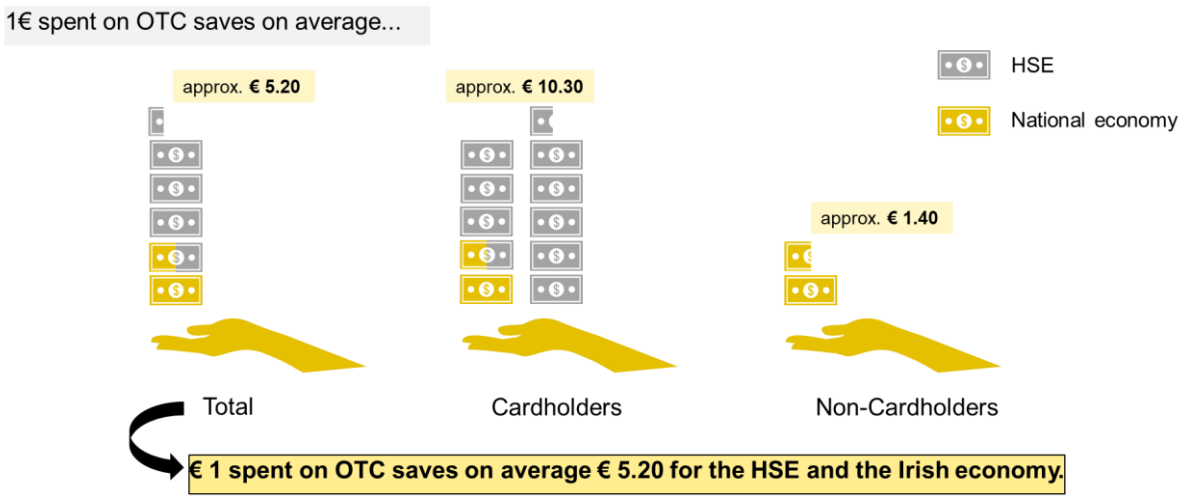

Figure 7: € 1 spent on OTC saves money for the Irish economy

In addition to the savings for the Irish economy the savings for society should not be neglected either. From a societal perspective, it in fact is a cost shift if expenditure is passed on from the state to the citizens. Thus, private OTC expenditure paid for by the patient has to be taken into account. Therefore, as shown in Figure 8, patient savings are added to the savings for the economy. In the case of cardholders, patient savings are very low at EUR 0.02, which is why they have been neglected in the figure for reasons of visualisation.

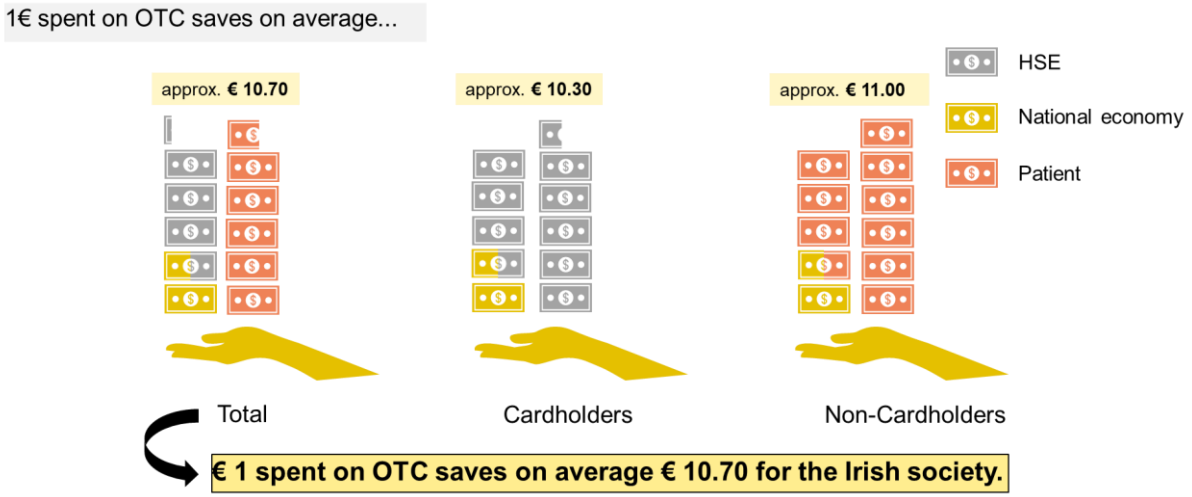

Figure 8: € 1 spent on OTC saves money for the Irish Society.

The following chapter describes the potential for the future.

4.4. Potential cost and benefit effects by enhancing the role of self-care in future

In general the potential for expanding self-care in a country beyond this presented existing scope can be identified in two directions: 1) facilitating access to more people in already established areas of self-medication (“depth”) or 2) increasing access by adding new active ingredients and/or indication areas where responsible self-medication has not yet been practiced (“breadth”) taking into account the specifications of the European Commission's Switch Guideline and national regulations. [86] Based on these considerations, different development potentials for national constellations represented by four quadrants (Figure 2) were determined.

The unexploited self-medication potential is approximately 10% to 25% of current GP visits in the respective countries. Against this background, country-specific potentials were calculated and weighted on a per capita basis to form a pan-European potential scenario. The results are shown in the following figure.

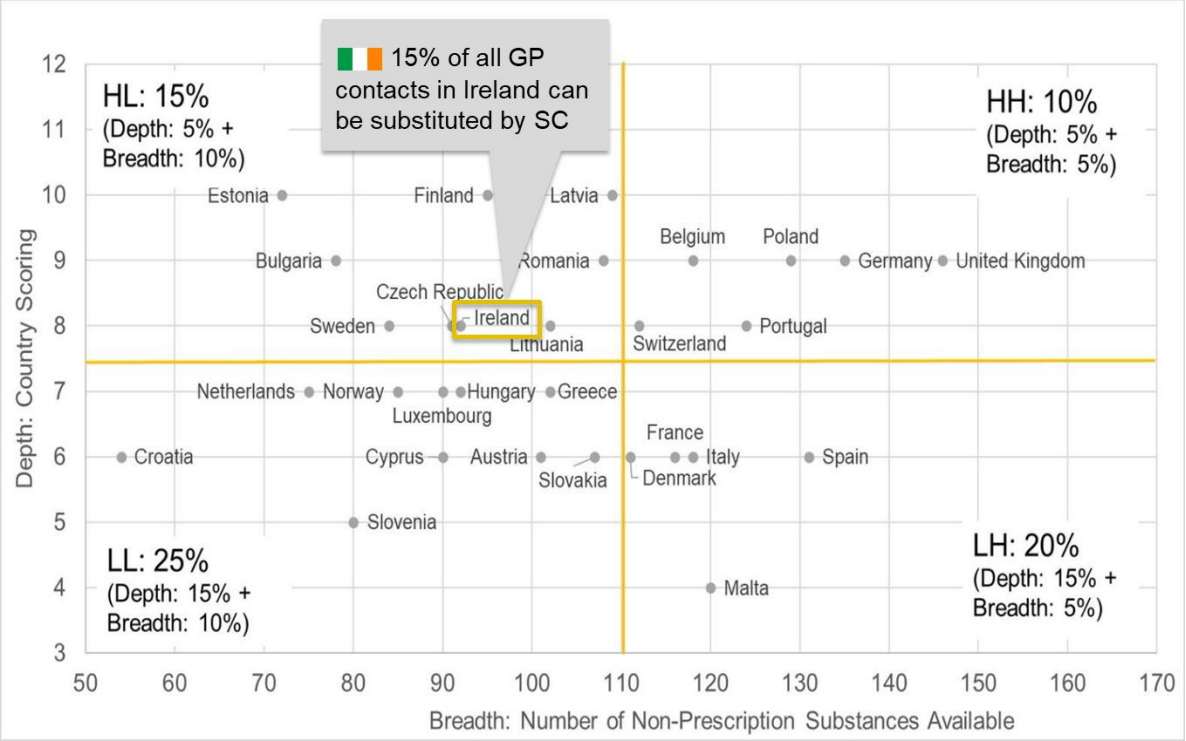

Figure 9: Potential scenario: Substitution from general practitioner visits to self-care

In the graphical overview, Ireland is located in the upper left quadrant, whereby the distance to the X-axis (horizontal) is less than to the Y-axis (vertical). In concrete terms, this means that the significance of self-medication in Ireland is at a medium level compared to the rest of Europe. However, the potential in terms of the depth of self-medication is already more fully utilised than in terms of the breadth.

Based on the concrete calculation parameters and detached from the methodically simplified classification into the four quadrants, a growth potential of 15% can be realistically applied to Ireland. The effects in this scenario of + 15% in GP cases substituted by self-medication is shown in the following tables. The total figures again include the proportion of Cardholders and non-Cardholders. A sensitivity analysis with +/- three percentage points is also carried out there.

Table 9: Cost effects in substitution scenarios in Ireland

Cost Effects (self-care vs GP) in Substitution Scenarios				
		Scenario 1: -3%-Points	Scenario 2: Basic Scenario SC Potential +15%	Scenario 3: +3%-Points
	Substitution volume	**3.49 m**	**4.37 m**	**5.24 m**
Direct Cost	Medication cost OTC (EUR)	12.63 m	15.79 m	18.95 m
	Medication cost Rx (EUR)	- 36.54 m	- 45.68 m	- 54.82 m
	Treatment cost GP (EUR)	- 206.33 m	- 257.91 m	- 309.49 m
Indirect Cost	Time cost GP (min)	- 84.11 m	- 105.13 m	- 126.16 m
	Treatment-related work loss (EUR)	- 13.80 m	- 17.25 m	- 20.70 m
	Treatment-related work loss (min)	- 27.77 m	- 34.71 m	- 41.65 m
	Absence from work due to sick leave (EUR)	- 20.83 m	- 26.04 m	- 31.24 m
	Absence from work due to sick leave (min)	- 41.91 m	- 52.39 m	- 62.86 m
Intangible Cost	Time cost patient (min)	- 270.14 m	- 337.67 m	- 405.21 m

The savings in direct and indirect monetary costs already realized in the status quo result in a total of EUR 1,451.27 million for Ireland (see Table 5). Additionally, further potential savings of EUR 287.8 million direct costs (medication costs for OTC and Rx & treatment costs GP) and EUR 43.29 million indirect costs (treatment-related work loss & absence from work due to sick leave) which adds up to EUR 331.09 million can be realistically achieved through an uptake of responsible self-medication. That would amount to a further 22.81%. Thus, self-medication can save a total of EUR 1,782.36 million in direct (EUR 1,549.33 million) and indirect (EUR 233,03 million) costs if the potentials that are already possible were exploited. The percentage savings potential may be extrapolated to all sub-groups of costs and the savings from different perspectives. If it is assumed that the change in legal framework conditions that would be necessary to exploit the potentials of self-medication in this way would take a period of several years, the savings potentials mentioned here would have to be discounted accordingly to their present value. In accordance with health economic guidelines, next to the sensitivity calculations with +/- 3%-points which were carried out in this context, the authors propose a discount rate of 3% p.a..

The saving potential from different perspectives is presented in the next table.

Table 10: Cost effects in substitution scenarios from different stakeholder perspectives in Ireland – total

Cost Effects (self-care vs GP) from Different Perspectives - Total				
		Scenario 1: -3%-Points	Scenario 2: Basic Scenario SC Potential +15%	Scenario 3: +3%-Points
	Substitution volume	**3.49 m**	**4.37 m**	**5.24 m**
Patient Perspective	Medication cost OTC (EUR)	12.63 m	15.79 m	18.95 m
	Medication cost Rx (prescription charge) (EUR)	- 26.63 m	- 33.29 m	- 39.95 m
	GP cost (co-payment) (EUR)	- 118.74 m	- 148.43 m	- 178.11 m
	Total cost savings (EUR)	**- 132.74 m**	**- 165.92 m**	**- 199.11 m**
	Time cost patient (min)	- 270.14 m	- 337.67 m	- 405.21 m
GP Perspective	Time cost GP (min)	- 84.11 m	- 105.13 m	- 126.16 m
National Healthcare System Perspective	Treatment cost GP (EUR)	-80.58 m	- 100.72 m	- 120.87 m
	Medication cost Rx (EUR)	-9.91 m	- 12.39 m	- 14.87 m
	Total cost savings (EUR)	**- 90.49 m**	**- 113.12 m**	**-135.74 m**
National Economy Perspective	Absence from work due to sick leave (EUR)	- 20.83 m	- 26.04 m	-31.24 m
	Treatment-related work loss (EUR)	- 13.80 m	- 17.25 m	-20.70 m
	Total cost savings (EUR)	**- 34.63 m**	**- 43.29 m**	**-51.94 m**
	Absence from work due to sick leave (min)	- 41.91 m	- 52.39 m	- 62.86 m
	Treatment-related work loss (min)	- 27.77 m	- 34.71 m	- 41.65 m
	Total time savings (min)	**- 69.67 m**	**- 87.09 m**	**- 104.51 m**

The following figure summarises the total monetary effects that are already being achieved in the status quo and that may be added in the future. The different perspectives are shown, which collectively illustrate the savings and saving potential for the whole of society in Ireland. From a societal perspective in particular, there is significant future potential on the scale of almost a quarter to increase the benefits of self-care.

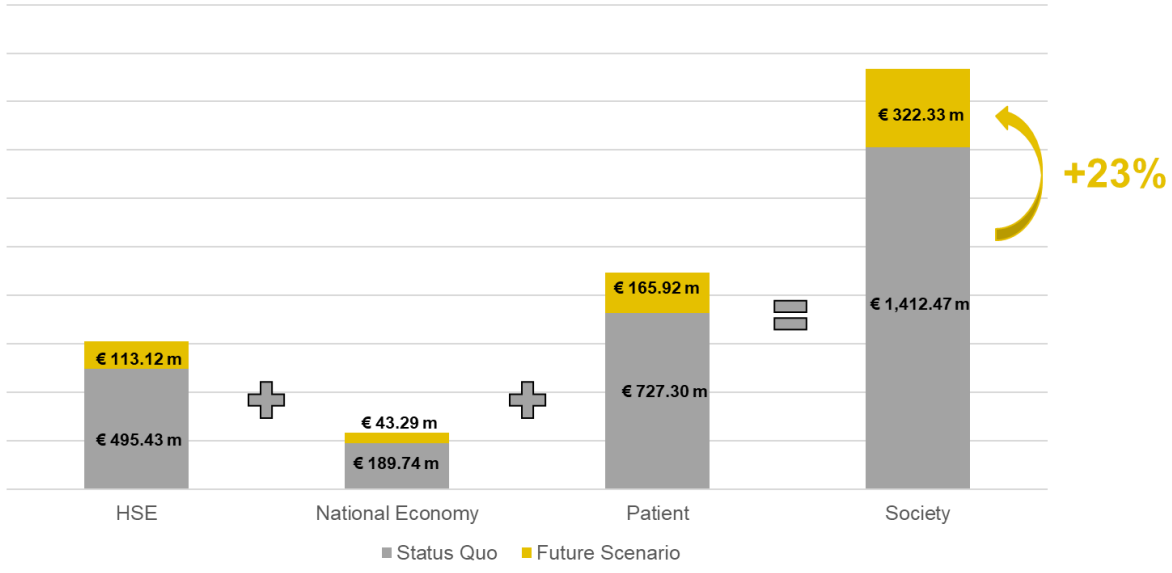

Figure 10: Saving effects (status quo) and saving potentials (future) from different perspectives

The fundamental difference to the health economic effects presented in Chapter 4.2 is represented in the fact that now not only savings and relief effects already realised through self-care have to be considered, but also effects that can still be achieved in the future. This becomes particularly clear with a view to the relief of GPs by self-care. In the above-mentioned chapter, the number of additional GPs that would be needed if self-care were not practised to the extent it is today was demonstrated (Figure 6). Figure 11 below reveals the extent to which GPs could be relieved if the role of self-care in minor ailments could be further strengthened throughout Europe.

Accordingly, 775 GPs (shown in green below) could be freed up by self-care, thus their valuable working time would be available for treating patients suffering from more severe illnesses. Through this relief effect, self-care could also make a significant contribution to countering the shortage of GPs that is becoming apparent in many European countries. Alternatively, if the number of GPs remains the same, each GP could gain 1.1 extra hours per day. This could also be used for more treatment of other patients with more severe illnesses.

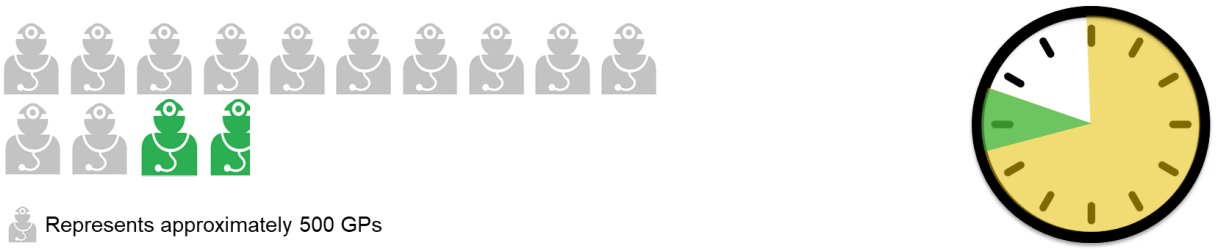

Figure 11: GP working hours per day can potentially be freed with self-care

Taking into account substitution effects divided between Card- and Non-Cardholders, the effects differ as shown in the tables below.

Table 11: Cost effects in substitution scenarios from different stakeholder perspectives in Ireland - Cardholders

Cost Effects (self-care vs GP) from Different Perspectives – Cardholders				
		Scenario 1: -3%-Points	Scenario 2: Basic Scenario SC Potential +15%	Scenario 3: +3%-Points
	Substitution volume	**1.48 m**	**1.85 m**	**2.22 m**
Patient Perspective	Medication cost OTC (EUR)	5.36 m	6.70 m	8.04 m
	Medication cost Rx (prescription charge) (EUR)	- 5.60 m	- 6.99 m	- 8.39 m
	GP cost (co-payment) (EUR)	0 m	0 m	0 m
	Total cost savings (EUR)	**- 0.23 m**	**- 0.29 m**	**- 0.35 m**
	Time cost patient (min)	- 114.67 m	- 143.34 m	- 172.01 m
GP Perspective	Time cost GP (min)	- 35.70 m	-44.63 m	- 53.55 m
National Healthcare System Perspective	Treatment cost GP (EUR)	- 80.58 m	- 100.72 m	- 120.87 m
	Medication cost Rx (EUR)	- 9.92 m	- 12.40 m	- 14.88 m
	Total cost savings (EUR)	**- 90.50 m**	**- 113.12 m**	**- 135.74 m**
National Economy Perspective	Absence from work due to sick leave (EUR)	- 8.84 m	- 11.05 m	- 13.26 m
	Treatment-related work loss (EUR)	- 5.86 m	- 7.32 m	- 8.79 m
	Total cost savings (EUR)	**- 14.70 m**	**- 18.37 m**	**- 22.05 m**
	Absence from work due to sick leave (min)	- 17.79 m	- 22.24 m	- 26.69 m
	Treatment-related work loss (min)	- 11.79 m	- 14.73 m	- 17.68 m
	Total time savings (min)	**- 29.58 m**	**- 36.97 m**	**- 44.37 m**

Table 12: Cost effects in substitution scenarios from different stakeholder perspectives in Ireland – Non-Cardholders

Cost Effects (self-care vs GP) from Different Perspectives – Non-Cardholders				
		Scenario 1: -3%-Points	Scenario 2: Basic Scenario SC Potential +15%	Scenario 3: +3%-Points
	Substitution volume	**2.01 m**	**2.51 m**	**3.01 m**
Patient Perspective	Medication cost OTC (EUR)	7.27 m	9.09 m	10.91 m
	Medication cost Rx (EUR)	- 21.03 m	- 26.29 m	- 31.55 m
	GP cost (co-payment) (EUR)	- 118.74 m	- 148.43 m	- 178.11 m
	Total cost savings (EUR)	**- 132.50 m**	**- 165.63 m**	**- 198.75 m**
	Time cost patient (min)	- 155.47 m	- 194.33 m	- 233.20 m
GP Perspective	Time cost GP (min)	- 48.40 m	- 60.50 m	- 72.61 m
National Healthcare System Perspective	Treatment cost GP (EUR)	0 m	0 m	0 m
	Medication cost Rx (EUR)	0 m	0 m	0 m
	Total cost savings (EUR)	**0 m**	**0 m**	**0 m**
National Economy Perspective	Absence from work due to sick leave (EUR)	- 11.99 m	- 14.98 m	- 17.98 m
	Treatment-related work loss (EUR)	- 7.94 m	- 9.93 m	- 11.91 m
	Total cost savings (EUR)	**- 19.93 m**	**- 24.91 m**	**- 29.89 m**
	Absence from work due to sick leave (min)	- 24.12 m	- 30.15 m	- 36.18 m
	Treatment-related work loss (min)	- 15.98 m	- 19.97 m	- 23.97 m
	Total time savings (min)	**- 40.10 m**	**- 50.12 m**	**- 60.15 m**

Again, the effects only affect the monetary costs from the perspective of patients and the National Healthcare System. While total costs amount to additional expenditure of EUR 0.29 million for Cardholders, the National Healthcare System could realise saving potentials of EUR 113.12 million. In the case if non-Cardholders, they have the potential to save EUR 165.63 million while the savings for the healthcare system remain at EUR 0.

4.5. Discussion and evaluation of the results

Self-care is gaining additional interest due to increasing financial pressure on healthcare systems and the need to find a strategy to support primary healthcare. Since only self-medication as a partial aspect of self-care is quantifiable, this study aims to measure the associated effects in order to contribute to the understanding of the overall value of self-care in Ireland. This socioeconomic study adopts existing methodological approaches for the quantification of self-medication as well as modifies and adapts them further to evaluate the Irish self-care framework and conditions in terms of access to and uptake of responsible self-medication from different perspectives. The single treatment case comparison of the direct costs in the two investigated treatment pathways, GP and self-medication, demonstrates significant cost differences between the treatment pathways. In this way it becomes evident that self-medication is already a source of substantial economic and social benefits in Ireland.

The calculations demonstrate direct cost savings and a significant reduction in indirect costs through self-medication. The latter includes expenditures due to time gained from saved GP visits and the lowered number of sick leave-associated losses of work productivity. These yearly costs would otherwise be incurred by the HSE and by the Irish economy. Moreover, healthcare professionals and individuals gain substantial benefits in terms of time spent. Freed up GP time may be allocated to more urgent or complex medical cases. Higher medication costs (for OTCs) can - depending on the individual healthcare cost status - arise exclusively from the patient's perspective. However, these should be outweighed by monetary savings from avoided GP visits, Rx-Costs (prescription charges) and considerable time savings.

Additionally, future saving potentials have an impact on the strained situation in medical practices in Ireland. The unexploited self-medication potential is equivalent to the proportion of GP cases that could be substituted by self-medication. This effect has been discussed in various European studies and is often expressed in terms of time spent and appointments allocated to MA cases during GP visits or as the number of avoided GP visits resulting from a switch from prescription-only to OTC medicines. [76,87,88] The identified potential of freed GP resources can especially benefit severe cases of illness and reduce waiting times for patients. [89,90] Thus, access to healthcare services can be enhanced in Ireland (as well as in many countries across Europe) by increasing responsible self-medication.

Overall, this study demonstrates that self-medication provides both social and economic benefits to individuals, healthcare providers, the healthcare system, the national economy and the Irish society in total. Moreover, it emphasizes the advantages of self-medication: From the patient perspective this is a time saving low-threshold access to medicines appropriate to treat their MAs, GPs save time as well, there is less time lost in productivity and the healthcare systems save expenses on medicines and GP visits. There is also great potential for individuals to gain increased benefits by engaging in more self-care practices.

However, self-medication is still not in an adequate and sufficient way perceived as an essential pillar of the Irish healthcare system. Although some meaningful policies to promote self-care have been put in place in Ireland, there is still a lack of targeted measures to incentivise self-medication at an individual and collective level. Adequate self-care policies can prevent problems that may lead to reluctance to practice self-care at an individual level. These include limited understanding of the normal course of symptoms, such as severity and duration, or lack of knowledge about medicines that may be available without a prescription. [91,92] In line with the WHO guideline on self-care interventions for health and well-being, coherent healthcare policy and regulation supporting self-care are required to increase self-care uptake and ensure that self-care interventions take place in a safe and appropriate enabling environment. [93] Additionally, greater health literacy initiatives as well as greater access to health information is necessary to ensure that individuals understand and are able to practice responsible self-medication as an important element of self-care based on credible health information.

The risks that may be associated with an expansion of self-medication are, by their very nature, the same as those that apply to existing self-medication. It is obvious, however, that these risks could increase if the scope of self-medication were to go significantly beyond what is practised today. The limits of self-medication are of course exceeded at the latest when self-diagnosis is not possible and/or for example a prescription for prescription-only medicines and/or close monitoring of the condition is required. In this case, carrying out self-medication could worsen the health or the healing chances of the patient and would not be justifiable as a responsible treatment choice.

Therefore, the criteria for the status of non-prescription medicine according to the legal framework in the EU limit the status of non-prescription treatment to self-diagnosable and self-monitored conditions. [10] Also, in the case of reclassification, national medicines agencies or the EMA re-examine the risks and benefits of a medicine in the self-care context. Moreover, the respective pharmaceutical form, dosage and package size with regard to the suitability for self-care are also examined and they often differ from prescription-only medicine in order to minimise risk. Last but not least, the question of whether the patient is able to correctly recognise the symptoms and to self-administer the medicine plays a role. If there is a risk that an incorrect self-diagnosis and thus, an incorrect self-care measure may lead to a worsening of the actual

condition, this will result in a negative opinion regarding a marketing authorisation as OTC. If, in practice, a risk emerges which cannot be effectively addressed by risk mitigation measures, a re-switch, i.e. the reclassification from non-prescription to prescription-only status, will be carried out by the Health Products Regulatory Authority (HPRA) or the EMA on a European level.

Only areas of application and groups of preparations that meet the basic requirements of self-diagnosis and substances that meet all the criteria for non-prescription status are discussed in the context of the present study. The fact that a prudent further development of self-care within these defined limits could be clinically questionable is not supported by scientifically applicable findings and can therefore be disregarded at this point. However, it must be noted that with increasing access to diagnostic tools, for example symptom checkers, in vitro diagnostic tests, as well as digital and artificial intelligence-supported approaches there is a possibility that the number of self-treatable indications will significantly increase in the future.

When discussing and weighing the clinical risks and limits of self-care, it should also be taken into account that the danger of misdiagnosis, non-recognition and thus delay of illnesses can not only go hand in hand with increased self-care, but is also intensified when health systems are overburdened and, for example, GPs are forced to diagnose and treat important cases under de facto already high time pressure. The fact that this situation is already a reality in many medical practices has been pointed out internationally in various studies ever since the controversy on this problem ("To err is human") was initiated in the USA about 20 years ago. Today the lack of time is one of the reasons most often cited in professional circles for the fact that there is a corresponding error rate, especially in diagnosing. [94–99] A particularly high lack of time occurs in the for example in the Irish practices of GPs at peak times of the cold and flu season and thus in connection with consultation occasions where more self-care would be conceivable. [99–101]

5. Recommendations to Irish Healthcare Policy

The starting point for this research project was not least the realisation that the public healthcare system in Ireland is increasingly confronted with a lack of resources and capacity. As expected, the hypothesis that self-treatment with over-the-counter medicines can help to relieve this situation has been confirmed by the data presented. In this respect, a second aim of this study is to derive recommendations for health policy that can help to enhance the importance of self-care in Ireland. The following section begins with a general discussion of the role that health policy measures can play in promoting self-care. Specific measures for a proactive self-care policy in Ireland are subsequently described.

5.1. General assessment and categorisation of the role of politics in the area of self-care

From a clinical and health economic perspective, it is on the one hand counterproductive if people treat themselves or do not get treatment at all even though medical therapy would be required. On the other hand, it is likewise uneconomic and likewise counterproductive with a view to community and social interests, if people visit the GP, although self-care would be sufficient. The latter is the case if appropriate treatment is not available at a low-threshold level. One reason for this might be that patients do not know about other treatment options than the GP. Second, practising self-medication might appear to be too expensive compared to benefits resulting from its use.

The aim of health policy should therefore be to promote the right decision of the individual in favour of treatment by a GP (if necessary) or in favour of self- care (if sufficient), because these patients use resources (for example GP time) that could be used more efficiently for other purposes. Against this background new information and incentive systems for consumers are required in order to open up the efficiency reserves. Furthermore, the guiding role of pharmacists in the health care system as well as their significance as primary care providers for minor ailments should be strengthened. Moreover, the involvement of pharmacies as a decisive factor for the success of Rx-to-OTC switches is also shown in corresponding studies.

The extensive evidence base revealed in this study should serve as a foundation in the development of health policy in favour of the promotion of self-care. Moreover, numerous ideas, approaches and feasible proposals for a pro-active self-care policy exist and should be considered in the decision-making process. The key challenge will be to communicate the current state of knowledge to the expert audience and decision-makers of the Irish healthcare systems. The focus of this communication should be placed on achieving approaches that are acceptable for the majority of people and can be adequately implemented into practice.

Through an adequate self-care policy resources can be freed up and considerable efficiency gains can be exploited. The success of such a policy can only be achieved if all involved stakeholders are adequately incentivised. These incentives should in any case aim to align the objectives of the individual actors with those of the society at large. The resources freed up through the adequate self-care policy play a significant role in this process as their distribution among the relevant actors determines their actions. Due to the fact that every Euro spent on self-medication today releases a multiple of that amount into society, it is fundamentally worthwhile making appropriate investments in order to implement effective incentives for promoting self-care.

5.2. Concrete recommendations for a proactive self-care policy in Ireland

To strengthen the role of self-care, the starting point must be a review and interpretation of the initial situation in Ireland. Specifically, the current availability of OTC medicines and their actual use (also as an alternative to a GP visit) have to be taken into account. This determination of the status quo position (in the following referred to as “positioning”) relates to the market situation in the comparison of European countries described in Figure 9 (Chapter 4.3) as breadth (availability) and depth (degree of utilisation).

The positioning of Ireland in this European self-care landscape can be used to determine the direction of development in which the potential for more self-care exists. Starting from the status quo, the development strategy can aim for greater breadth, greater depth or balanced growth in both directions. If, for example, a relatively large number of substances is available over-the-counter in a country, but only little use is made of them in the context of self-care (for example Spain), priority would be given to corresponding behavioural incentives for patients and healthcare professionals (depth). Conversely, the growth of OTC medicine availability (including Rx-to-OTC switches) would be favoured if there is a high willingness and use of self-care in a country (depth), but only a comparatively limited range of substances is available for this purpose (for example Estonia). In a country like Ireland with a balanced ratio of depth and breadth (figuratively speaking: countries in the centre of the image or arranged along the bisecting line of the angle – for example Belgium, Switzerland and Ireland), strategies that

promote both the utilisation rate (uptake) and the availability of preparations are particularly promising, so that self-care grows in breadth and depth.

In each of the previously described cases, i.e. regardless of the identified priorities for a given country, the policy mix must be tailored precisely to these policy aims. The development of self-care in the direction of breadth or depth requires different steering measures and incentives directed at different actors. In addition, a further distinction must be made within the following categories.

Four categories of self-care promotion (I a to II b as shown in the following figure), the incentive levels and different actors (for example consumer, pharmacy, authorities) were identified for which incentives must be implemented in order to establish the conditions for more self-care.

These abstract steering approaches can be assigned to practical instruments for promoting self-care, which are already being used successfully in some countries or at least represent highly promising ideas and concepts. Thus, concrete measures that fit the respective steering objectives according to categories I a.) to II b.) are assigned based on their incentive effects in Figure 12 below.

This overview, therefore, shows – according to a toolbox system – a selection of concrete measures which, on the basis of the present study, are generally suitable (i.e. independent of other political considerations) if certain steering goals are to be achieved.

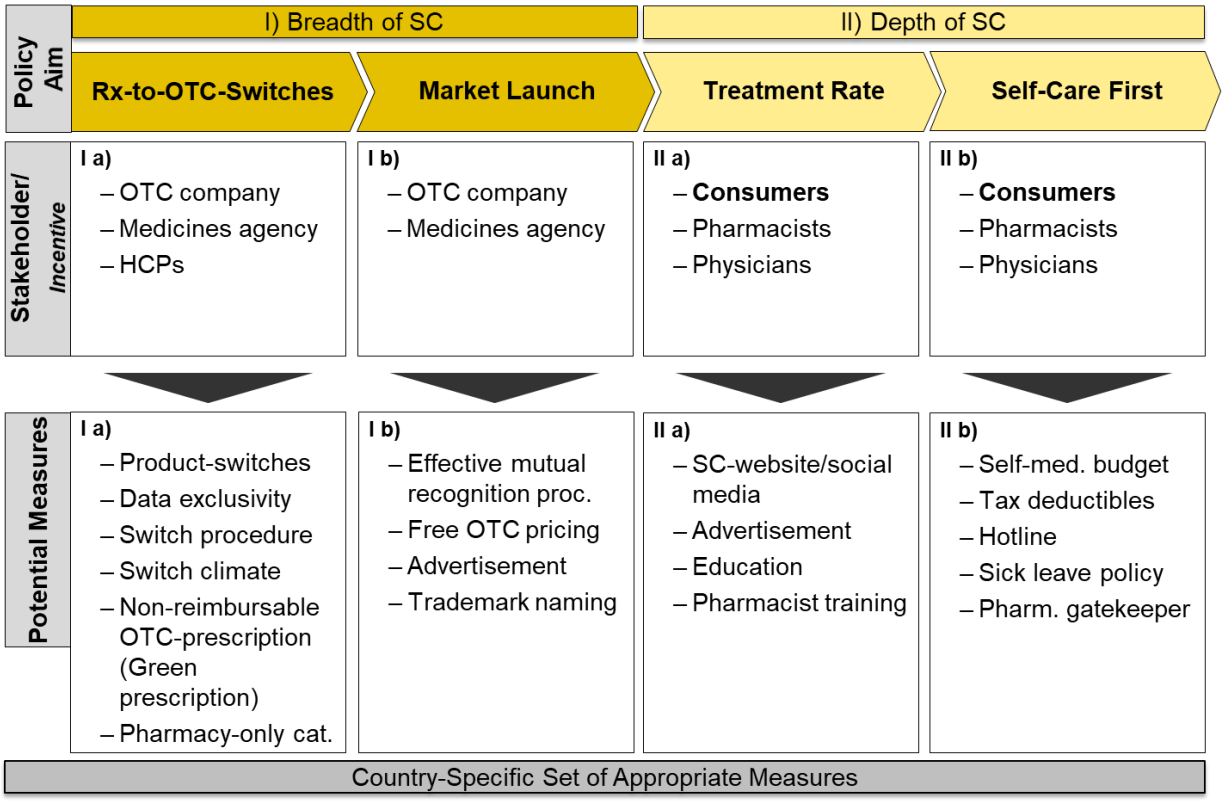

Figure 12: Process of derivation of country-specific self-care policy measures

Ireland is positioned in the field with a relatively high depth and a comparatively low breadth of self-care. From this it can be deduced that measures to promote self-medication should be aimed in particular at ensuring that patients have access to medicines for self-medication in more indications. Nevertheless, there is also potential for improvement in terms of depth. In

this context a specific feature of the Irish system, the inherent subdivision of patients into Cardholders and non-Cardholders plays an important role. The costs of physician visits and prescribed medicines are met by the stat, while non-Cardholders must pay these expenses out of their own pockets. This ultimately means that the current monetary incentives for self-care vary greatly between Cardholders and non-Cardholders. Even today, non-Cardholders have a strong financial incentive to treat themselves rather than visit a GP. By contrast, Cardholders have no financial incentive at all for self-care, only a time incentive. The measures aimed at giving self-medication more depth, as defined above, must therefore be geared primarily to Cardholders.

The results of the economic calculations show that the extension of the medical card to free OTC medicines might make sense in view of the potential savings for the healthcare system and the national economy. [15] In view of the time taken up by GPs as a result of medically unnecessary practice visits by Cardholders, an extension to GP Cardholders should be discussed.

With regard to consumer attitudes towards self-care and self-medication the baseline situation for implementing measures to promote self-care in Ireland is very good. As the studies presented in chapter 2.3 show, 92% of respondents are in favour of increased self-care. In addition, perceptions of the pharmacy are particularly positive. Patients with a continuing or enduring medical condition are more likely to interact regularly with a pharmacist than a GP. 90% of respondents are (very) satisfied with the quality of advice in their pharmacy. A further survey has shown that consumers overwhelmingly both feel able to treat their MAs themselves and that they prefer this or a pharmacy visit to a GP visit. There is therefore a high willingness to carry out self-care or self-medication.

Especially in the light of this actual situation the Irish pharmacies can play a significant role in further promoting self-care as they are often the initial contact point for patients with minor ailments. Evidence demonstrates that pharmacists have the relevant competencies to triage patients and act as gatekeepers to ensure that patients are guided to the most appropriate level of healthcare provision. In our research at the European level (in particular the AESGP study) it could also be found that structured systems, including netCare in Switzerland [102] as well as the Minor Ailment Schemes (MAS) and the Community Pharmacist Consultation Service (CPCS) in the United Kingdom [103], that combine behavioural incentives on the part of patients, pharmacists and GPs are particularly promising. The Pharmacy First service enables patients to be referred into community pharmacy for a minor illness or an urgent repeat medicine supply. The new Pharmacy First service, launched 31 January 2024, adds to the existing consultation service and enables community pharmacies to complete episodes of care for seven common conditions following defined clinical pathways. [104] Such structured systems utilise community pharmacists with the additional support of GPs, when necessary, to promote and support the effective management of minor ailments by patients.

Noteworthy consumer-focused approaches include a self-medication budget. This concept, developed and conceptually designed by May and Bauer, creates a strong incentive for patients to independently treat minor ailments that do not require the attention of a medical professional. This incentive is financially related and is linked to the patient’s choice between self-care and GP consultation for the treatment of a minor ailment. Since a patient can receive a reimbursement for a minor ailment treatment if they choose to visit a GP to obtain a prescription, they would likely prefer this option over the purchase of an OTC medicine which they

would have to pay out-of-pocket. Therefore, a self-medication budget eliminates the financially motivated choice of a GP visit over self-care. [23]

Sick leave policies also set a positive impulse for consumers to choose self-care as the lack of need for a medical sick leave certificate, such as in Norway, removes a major hurdle for self-care. [105] In view of the particularly high importance of pharmacies in Ireland and the essential role they play for consumers, it would be worth discussing whether pharmacies should be allowed to issue sick notes to patients. This would enable a great many people to treat themselves even if they are unable to work due to temporary ailments (for example colds). If there are concerns that this will lead to an increase in abuse by people who are unwilling to work, this could be counteracted by the specific details of the regulation. For example, sick leave at the pharmacy could be limited to certain indications and the maximum duration could be limited to a few days.

The aim of the previous recommendations was to improve the incentives for the use of self-medication in the population ('depth'). In order to also enable growth in terms of 'breadth' (see Figure 9), it would be expedient to consider releasing products from the prescription-only list. The basic importance of switches for the promotion of self-care is well-founded by various studies and also reflected in the results of a survey of experts. Above all, switches are the classic instrument for the extension of the spectrum of health disorders which are accessible to self-care. The switch of new substances or substance classes can be the initial step towards opening the door for self-care of entire indication areas or partial indications for the first time. This is particularly true if a switch provides the first adequate treatment option with non-prescription medicines in a specified indication area. For such cases, a series of examples can be found in the international switch history of the last few decades. In conclusion, the role of switches for the promotion of self-care can be summarised as follows: the availability of non-prescription medicines is important for the quantity and quality of self-care. Rx-to-OTC switches can, in particular, provide important impetus for the growth of self-care if they open up new therapeutic options. In addition, the availability of a non-prescription active substance can directly influence a patient's decision in favour of or against a GP consultation. As a restriction, however, it must be noted that the expected quantitative effects of switches on the extent of self-care should be estimated with caution because they cannot be assessed in isolation. Instead, it is deemed necessary that the existing environment of the self-care market in a respective country ("switch climate") creates the economic breeding ground for the switched substances. In this respect, conditions in Ireland are already not bad and could be further improved by the above proposals for new incentive mechanisms.

Additionally, sources of health information and tools, including self-care hotlines and self-care websites, provide low-threshold connection points to healthcare advice for minor ailments and improves consumer awareness of the possibilities of self-care.

6. Limitations

When interpreting the findings of this study, the following limitations need to be considered. The study is based on a dataset on various parameters that highlight treatment-related expenses, healthcare system coverage and average labour costs in Ireland. The quality, including completeness and how recent the data is, depends on data availability. In some cases, there was a need to utilize statistical methods to generate an average value for some datapoints. Although the present study does not focus solely on Rx-to-OTC switches and hence, the results are not fully comparable to previous European studies, it is evident that the future

potential value of self-care is closely linked to the availability of non-prescription medicines in Ireland.

Furthermore, the development and implementation of the health economic model highlighted that, as in any economic model, certain premises and assumptions must be made both for the calculations of the status quo and, to a greater extent, for projections on future scenarios. Corresponding limitations are always stated when first appearing in this study and are in any case based on the current state of research and relevant literature.

The potential costs associated with the misuse of OTC and Rx medicines were not considered in this study. Based on evidence, it was assumed that self-care is practised by the patient under either the guidance of a healthcare professional or by following product information. For prescription-only medicines, it was assumed that GPs always prescribe according to treatment guidelines in place and in the interest of the national healthcare system as well as patients. The latter can be classified as a restrictive assumption that leads to rather conservative results. This is due to the fact that potential effects of over-, under- and misuse of prescription medicines are in consequence not considered. On the other hand, the beneficial effects such as low-threshold and non-prescription access to medicines and the resulting positive supply effects for the overall population were not taken into account in this conservative calculation approach either.

Finally, a limitation can be attributed to the complex nature of the national remuneration system for GPs and the patient contribution system. The organisation of national remuneration systems for GPs and the partial cross-subsidisation between certain medical services make it difficult to point out certain influences on GP income that relate to the treatment of fewer patients. This is the reason why the GP costs were considered as income per minute/hour of working time that is based on average fee and working time. This methodological approach also takes into account the consideration that the utilisation of medical services results in high opportunity costs, as these services are no longer available elsewhere in the healthcare system. Additionally, when examining the cost impact from the patient perspective, patient contribution per Rx prescription under the HSE coverage (Cardholders / non-Cardholders) varies according to patient group (for example elderly, low-income and young children). Therefore, an estimation of the patient contribution per Rx prescription and GP consultation was made based on the average amounts identified in the Irish population. This national average may therefore not reflect the total monetary benefits that can be realised by specific groups of patients under special schemes or statutory regulations in the national healthcare system (HSE).

7. Conclusion

Like other national healthcare systems all over Europe, the Irish Health Service Executive (HSE) is facing a scarcity of resources including General Practitioner (GP) shortages and financial challenges. The increasing scarcity of resources is evolving due to the demographic development and innovative medical developments. Based on the perception that self-care could relieve pressure from the public healthcare system, its promotion is a promising option. Currently, in Ireland (as in many other countries), patients as well GPs, experience a substantial lack of time for patient care in daily medical practice. This situation might even become more severe taking into account the emerging resource scarcity in primary medical care.

As the results of the present study show, self-care already has a substantial effect on the resource consumption of the HSE, the national economy and society as a whole. Nevertheless,

additional resources can be freed up by further enhancing the role of self-care: Self-care would be an adequate alternative for patients in many cases of complaints that currently lead to a GP visit.

Obviously, the conditions under which people make the decision for or against self-treatment have a major influence on their choice. Against this background a specific feature of the Irish system is the inherent subdivision of patients into Cardholders and non-Cardholders. For the former, the costs associated with GP visits and medicines are covered by the state, while non-Cardholders must pay these expenses out of their own pockets.

The different resource burdens result in different incentives: Whereas non-Cardholders have a strong financial incentive to avoid GP visits in the event of self-treatable health disorders, there is potential for Cardholders to use the health service when not completely necessary. This means that, especially in the latter group of patients, there may be a tendency to visit the GP practice more often than necessary without a medical need to do so. The specific reasons for this may be that a (free) prescription for a medication or a sick note is desired. In other cases, consumers decide against self-care due to a feeling of uncertainty or subjective information deficits. On the other hand, well-informed consumers often make their decision in favour of self-care. The reasons include time savings, convenience and especially the low-threshold access to the care and consulting services of pharmacies. With this in mind, it should be a guiding principle in the design of the health policy framework that GP practices should not be consulted if not necessary in terms of medical need. Therefore, the aim of health policy should be to promote the right decision made by the individual in favour of treatment by a GP (if necessary) or in favour of responsible self-medication (if sufficient).

With regard to self-care and self-medication, an effective setting of incentives which make people base their treatment-decision on medical needs instead of financial or other extraneous considerations might include the following ideas:

The extension of the **Minor Ailment Scheme** in Ireland, which is already planned for those holding a medical / GP only card, to the entire population. The basic rationale for this arises from the disincentives for non-Cardholders as outlined above. Even if the financial costs of GP visits in these cases are not covered by the HSE, but by the patients themselves, these individuals take up the limited and valuable time of the GPs and thus cause significant opportunity costs.

The expansion of the **Gatekeeper Role of Pharmacies**. The conditions for this are particularly good in Ireland because there are many pharmacies and the population places a great deal of trust in pharmacists. As a low-threshold healthcare professional, the pharmacy is predestined to provide patients with adequate advice and medication or to refer them to a GP if the limits of self-treatment are exceeded in the respective case. A good example of this is the Pharmacy First service in the British NHS. The Pharmacy First service enables patients to be referred into community pharmacy for a minor illness or an urgent repeat medicine supply. The new Pharmacy First service, launched 31 January 2024, adds to the existing consultation service and enables community pharmacies to complete episodes of care for 7 common conditions following defined clinical pathways. [104]

A so-called **Self-Medication Budget** could serve as a concrete instrument for strengthening pharmacy-based self-medication. This concept, developed by *May and Bauer*, envisages that the insured would be provided with a budget of, for example, 50 Euros per year to purchase non-prescription medicines in pharmacies without having to make additional contributions to

the health system. This would eliminate any (dis)incentive to visit a GP practice simply because medication would be available there free of charge with a prescription (in Ireland for Cardholders).

In order to address not only the financial aspect but also the above-mentioned problem that people only visit a GP practice because they need a sick leave certificate, the option of a **Pharmacy Sick Leave Certificate** could be introduced. In practice, the requirement for a sick note is in many cases the main motivation for a GP visit. Even if patients can self-manage their symptoms and treat them adequately for example with OTC medicines, they still might wish to obtain a sick leave certificate. This means that self-care is ruled out as a treatment option from the outset in a large number of cases. Sick leave in the pharmacy could be restricted to certain indications and a limited number of days. A psychological barrier for people who want to take time off work without being sick would still remain.

Last but not least, it should be noted that the full potential for self-medication in Ireland can only be realised if further **Rx-to-OTC Switches** are carried out. These expand the spectrum of self-care and are particularly effective when they open up new indications for OTC medicines or close therapeutic gaps. Since Ireland still has considerable OTC gaps compared to other European countries, the growth potential of the Irish OTC market through switches is comparatively large. Although pharmacies will be able to prescribe certain preparations in the foreseeable future, this should not be regarded as switches in the proper sense. Evidence from the Swiss market has shown that prescriptions from the pharmacies might still be a hurdle for consumers in accessing medicines. [106]

The health economic approach applied in this study to determine the economic and social value of self-medication has enabled the generation of new evidence for the public healthcare system. It provides an up-to-date database on the value of self-medication in Ireland that allows the analysis on self-medication access and uptake. The evidence should be used to support the concrete development of national policy recommendations. New information and incentive systems for consumers are required in order to leverage the efficiency reserves identified in this study. There is a strong need for the conceptual development of incentive systems that are adapted to the individual situation of the Irish people. In consideration of the significant effects of self-medication on indirect costs, however, a stronger focus should be placed on self-medication not only from a health policy perspective but also from an economic policy perspective.

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Appendix

Ireland			
	Data	**Year of publication**	**Reference**
General information			
Number of inhabitants	5,281,600	2024	https://www.statista.com/statistics/537430/ireland-total-population/
Country size (km²)	70,273	2024	https://de.statista.com/statistik/daten/studie/326957/umfrage/flaechen-der-eu-laender/
GDP	509,951,800,000	2023	https://www.statista.com/statistics/685925/gdp-of-european-countries/
Costs (% of GDP) of healthcare	6.60%	2023	https://stats.oecd.org/Index.aspx?DataSetCode=SHA
Average expenses on healthcare per capita per year	4,367	2021	https://www.cso.ie/en/releasesandpublications/ep/p-mip/measuringirelandsprogress2022/health/#:~:text=Ireland%3A%20Current%20public%20expenditure%20on%20health%20care&text=As%20a%20proportion%20of%20Modified,%2C%20an%20increase%20of%2038.8%25.
Number of pharmacies	1,981	2021	https://www.thepsi.ie/sites/default/files/2024-06/PSI_Annual_Report_%202022.pdf
Number of OTC medications available	92	2020	https://otc.aesgp.eu/
Average income per capita (EUR)	44,890	2021	https://data.worldbank.org/indicator/NY.ADJ.NNTY.PC.CD?locations=IE (1USD=0,9EUR)
Medication costs			
Average price per Rx medication (EUR)	13.08		Average of medication relevant to study derived from IQVIA market data
Average price per OTC medication (EUR)	10.91		Average of medication relevant to study derived from IQVIA market data
Coverage and contribution			
HSE coverage (% of inhabitants) – medical Cardholders	30,51 %	2023	https://www.hse.ie/eng/staff/pcrs/pcrs-publications/hse-annual-report-2023.pdf
HSE coverage (% of inhabitants) – GP Cardholders	11,94%	2023	https://www.hse.ie/eng/staff/pcrs/pcrs-publications/hse-annual-report-2023.pdf
No HSE coverage	57,55%		Calculation
Patient contribution per physician visit under HSE	0.00		

coverage (GP & medical Cardholders) (EUR)			
Patient contribution per physician visit without HSE coverage (EUR)	49.23		(EUR 1.50 – approx. 10% over 70 years old paying EUR 1)
Patient contribution per Rx prescription (EUR) under HSE coverage (medical Cardholders)	1.45	2023	https://www.oecd-ilibrary.org/docserver/3abe906b-en.pdf?expires=1725276926&id=id&accname=guest&checksum=703ED606DCBAFDC138B2404A93ADF5D3
Patient contribution per Rx prescription (EUR) under HSE coverage (medical & GP Cardholders)	4.72		All Cardholders (71.9% medical card – see above, 28.1% GP card – pay full price)
Patient contribution per Rx prescription (EUR) without HSE coverage	13.08		Full Rx price
Treatment cost GP			
Number of GPs	6,806	2024	https://www.gov.ie/en/publication/93e48-national-healthcare-statistics-2024/
Average working time of GP per week (hours)	48.5	2021	https://bmcprimcare.biomedcentral.com/articles/10.1186/s12875-021-01377-0
Average number of GP working days per year	233	2019	http://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/publication/wcms_235155.pdf reduced by 20 days of obligatory vacation
Average turnover of each GP per year (EUR)	381,514	2020	https://www.qunomedical.com/en/research/healthcare-salary-index/
Average working time of each GP per day (hours)	9.7		Calculation
Average working time of each GP per day (min)	582		Calculation
Overall physician contacts	21,353,731	2021	https://bmcprimcare.biomedcentral.com/articles/10.1186/s12875-021-01377-0
Number of patients treated per day	29	2021	https://bmcprimcare.biomedcentral.com/articles/10.1186/s12875-021-01377-0
Work loss due to inability to work			
Average labour cost of a working hour per person (EUR)	29.82	2023	https://www.cso.ie/en/releasesandpublications/ep/p-elcq/earningsandlabourcostsq42023finalq12024preliminaryestimates/

Average labour cost of a working day per person (EUR)	238.56		Calculation
Average number of days of incapacity to work per year	9.5	2022	https://stats.oecd.org/index.aspx?queryid=30123
Average working hours per person (per week)	35.12	2023	https://www.statista.com/statistics/419584/main-job-average-weekly-working-hours-ireland-y-on-y/
Average number of hours worked per day	7.02		Calculation
Average minutes of incapacity to work per year	4,001.4		Calculation
Number of employed inhabitants	2,704,200	2024	https://www.cso.ie/en/releasesandpublications/ep/p-lfs/labourforcesurveyquarter12024/employment/
Employment rate	0.51		Calculation
Time cost of patients			
Average number of physician consultation per person	4.34	2021	https://bmcprimcare.biomedcentral.com/articles/10.1186/s12875-021-01377-0
Patient GP consultation time per physician contact (min)	13.7	2021	https://bmcprimcare.biomedcentral.com/articles/10.1186/s12875-021-01377-0
Patient waiting time per physician contact (min)	35		[69]
Patient travel time per physician contact (min)	16	2024	https://www.cso.ie/en/releasesandpublications/ep/p-mdsi/measuringdistancetoeverydayservicesinireland/generalresults/ + Estimation
Total patient time spent for a GP visit (min)	64.7		Calculation
Time spent for a pharmacy visit (min)	20.5	2024	https://www.cso.ie/en/releasesandpublications/ep/p-mdsi/measuringdistancetoeverydayservicesinireland/generalresults/ + Estimation based on: [71,107–109]
Therapy related work loss			
Share of GP visits during working time	20%	2016	Estimation based on: [69,80,110]