Dividing the inseparable

The link between physical and mental health in the EU’s second Health Programme

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Abstract

Evidence shows that physical and mental health related problems are closely related. Chronic physical conditions are especially often associated with common mental difficulties, such as depression or anxiety. Those who live with one or more long-term physical illnesses are 2 to 3 times more likely to experience problems in mental health. On the other hand, at least 45% of people with psychological challenges also develop chronic physical conditions. This reciprocal relationship of health conditions is due to several different factors, such as health behavior, psychological or common underlying biological components, which poses severe and otherwise avoidable impairments to the patients’ lives.

The goal of this study was to examine if this important interrelation of health problems and their common underlying factors were addressed by the priority actions of the work plans (WPs) and by the projects and joint actions (JAs) under the health promotion/health determinants strand of the second Health Programme (2008-2013) of the European Union (EU). To this end, first, a conceptual model connecting physical and mental health status with the help of four determinant factor groups (‘biological’, ‘health/illness behavior’, ‘social’ and ‘cognitive, affective and psychological’ determinants) was drawn representing a biopsychosocial perspective. Then, after adding a fifth group of factors (‘health conditions’) to the equation, a systematic qualitative content analysis of the summaries of the sub-priorities of the 6 WPs (from 2008, 2009, 2010, 2011, 2012 and 2013) and of the 19 ‘mental health’ and ‘chronic diseases themed projects’ and JAs matching the inclusion and exclusion criteria of this study was carried out. These information sources were searched for the pre-defined key factors representing each of the 5 determinant categories.

The results show that except for one sub-priority in the WP of 2010, none of the relevant priority actions, projects or JAs discussed mental and physical health problems together explicitly. There is also spacious room left for tackling the connecting ways of the chronic physical-mental axis indirectly, as the common underlying biological and cognitive, affective and personality factors were generally neglected by the selected strand of the second Health Programme. The social determinants were connected to mental-, but not to physical health most commonly, while the role of health and illness behavior received more attention in the WPs.

The recently launched third Health Programme of the EU thus could cease this missed opportunity to put greater emphasis on this so far neglected area of interrelated
health conditions, and work with a rather holistic approach considering the mental and physical aspects of health.
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1. Introduction

Preserving good mental health is an essential part of living a healthy, flourishing and prosperous life. Unfortunately, mental health problems put an increasing challenge on the public’s health, worldwide, as the number of people affected by such conditions has been increasing. The WHO’s Global Burden of Disease report (Mathers, Fat & Boerma, 2008) shows that neuropsychiatric problems - mainly affective disorders, substance use disorders and schizophrenia - account for 25% of all disability adjusted life years (DALYs), and makes the prediction that by 2030 unipolar depression will lead the list of causes of burden of disease. Thus, mental health problems account for a substantial share of the population’s ill health globally.

People with the same disease can have very different, subjective experiences about their health status and can show various reactions to it (Engel, 1977). It has been gaining more and more attention that chronic somatic diseases may be associated with mental health problems (Mitchell, 2012). There is an ongoing rise in the number of patients living with one or more chronic diseases, as life expectancy has also been increasing (Busse, Blumen, Scheller-Kreinsen and Zentner, 2010), which is causing a substantial challenge to the healthcare systems of developed countries as well (Busse et al., 2010). Thus, the need for a holistic approach that includes both, physical and mental aspects of health will not cease to be on the rise. Besides taking mental health problems into consideration when talking about the health of the population in general, the reciprocal link between physical and mental health conditions also needs to receive attention. With this integrative view it could be possible to offer more effective treatment, health promotion, disease prevention, health policy- and health programme planning and implementation (Prince et al., 2007).

This issue also needs to have a high importance in the European Union (EU), as through its health programmes the EU seeks to improve the health status of its citizens. Placing more emphasis on the holistic approach towards long term physical and mental health conditions could also be beneficial for the EU to reach its goal of contributing to more efficient and sustainable health systems (European Parliament and the Council of the EU 2014; Prince et al., 2007). The EU has also expressed its commitment to safeguard the fundamental rights of people with disabilities (including people with severe mental conditions) by ratifying the United Nations’ (UN) Convention on the Rights of Persons with Disabilities (United Nations, 2006).
includes ensuring the highest attainable level of health to everyone, without discrimination in the provision of healthcare services.

At this point, it is important to mention that the term ‘mental health’ is broad in itself and includes numerous determinants, such as psychological, social and biological factors (Raphael, Schmolke and Wooding, 2005). Although the biological component is just one of the many influencing factors of the mental status of people, most of the studies discovering the link between mental- and physical health uses diagnostic, ‘disorder’ categories of psychosocial and mainly psychiatric illnesses based on the spectrum of positive mental health and illness, for the purposes of statistical comparisons. This does not mean that the other, equally important aspects of mental health are disregarded in this thesis. Physical comorbidity is also only one segment of the problem-spectrum that mental ill health affects, and vice versa, physical health problems may also have an impact on more areas than only mental health. Nevertheless, this mental-physical comorbidity, its underlying factors and its consequences on the patients’ life is going to be highlighted in this paper.

1.1 The impact of co-occurring physical and mental health problems on the individuals

As mentioned above, besides the neuropsychiatric disorders, the main contributors to disability and mortality rates are the non-communicable diseases such as cardiovascular disorders, cancer and endocrine disorders (mainly diabetes) (Prince et al., 2007). A systematic review on multimorbidities found that mental health problems are associated in a non-random manner to a number of somatic diseases, such as asthma, chronic obstructive pulmonary disease (COPD), musculoskeletal disorders (such as arthritis), neurological diseases and pain conditions (Prados-Torres, Calderón-Larrañaga, Hanco-Saavedra, Poblador-Plou and van den Akker, 2014).

Two Dutch, nationally representative studies showed that significant and positive associations of comorbid chronic physical (hypertension, asthma, sinus infection, chronic back trouble, rheumatism, hypertension, migraine headaches and diseases of the digestive system) and mental health conditions (mood and anxiety disorders) predict considerable role impairment in the patients’ lives – defined as sickness absence days and work cut-back days –, compared to those without mental health issues (Buist-Bouwman, Graaf, Vollebergh and Ormel, 2005; Kessler, Ormel, Demler and Stang, 2003) and that the physical chronic conditions increased the risk of having anxiety and mood disorders, and vice versa (Buist-Bouwman at al., 2005).
Comorbid major depressive disorder (MDD) and chronic physical illness (arthritis, heart disease, asthma, back problems, COPD and diabetes) also lead to greater healthcare utilization and functional disability compared to physical condition alone in a Canadian population sample (Stein, Cox, Afifi, Belik and Sareen, 2006).

Scott et al. (2009), using data from the World Health Organization’s (WHO) World Mental Health Surveys, assessed the impact of chronic physical conditions (arthritis, heart disease, respiratory disease, chronic back/neck pain, chronic headache, and diabetes) and either mood or anxiety disorders on the severity of disability (defined as role impairment, mobility, self-care, social functioning and cognitive functioning) among people with these health conditions. Mental difficulties could be associated with severe disability to a greater degree than the chronic physical conditions. What is more, comorbid mental and physical problems contributed to more severe disability than simply the sum of these separate health conditions. This synergic effect of the physical-mental comorbidity has been shown to be true with regard to the everyday physical and mental functioning and quality of life as well in South Korean research (Lim, Jin and Ng, 2012).

These examples make it clear that comorbid physical-mental conditions seriously affect the everyday life of the patients as well as the healthcare systems. But what does this relationship look like exactly and what are the underlying factors?

1.1.1 The impact of long term physical illness on mental health

As it is also reflected in the studies presented above, several chronic physical conditions have a bidirectional relationship with mental health problems. The conditions that form comorbidity with psychological issues most often are: circulatory dysfunctions, such as coronary heart disease, atherosclerosis, stroke, hypertension, etc., musculoskeletal problems like rheumatoid- and osteoarthritis, endocrinological troubles - most commonly diabetes, respiratory problems such as asthma or COPD, and those conditions that affect the digestive system: ulcers and gastritis, for example (Verhaak, Heijmans, Peters, Rijken, 2005).

Authors of studies examining the physical, mental and emotional status of people with long-term physical diseases explain that adjusting to a new lifestyle, to the sick role, to the impairments in the everyday functioning and the constant medical surveillance can be very distressing (e.g. Turner and Kelly, 2000). What is more, the medications themselves and the progress of the disease can also have a direct effect on the functioning of the psyche of the patients (Turner and Kelly, 2000).
In Härter and colleagues’ study (2007) people with long term physical diseases were twice as likely to have some kind of mental disorders as well, and Moussavi and colleagues worldwide study (2007) repeated this significant finding with regard to depression. Also, the number of comorbid chronic physical conditions was significantly related to the probability of having mental health issues, and patients with chronic somatic problems have 3.5 times higher chances of having more than one psychological conditions than their healthy counterparts. In the global study the researchers also noticed that chronically ill patients who had comorbid depression got the worst overall health scores compared to the other disease states, and that depression had the largest contribution to the decline in health status (Moussavi et al., 2007). This risk factor for mental issues can be aggravated by social and relationship problems and also by a worsened perceived health (Verhaak et al., 2005). In addition, Cole and Denduruki (2003) say that disability is a strong predictive factor of depression.

Although the studies investigating the link between physical and mental health problems usually use cross-sectional strategies, one prospective longitudinal research performed by Chou, Huang, Goldstein and Grant (2013) analyzed whether circulatory, digestive and musculoskeletal diseases contribute to the emergence of mood disorders (such as MDD, bipolar I and II disorders and dysthymia) and anxiety disorders (such as generalized anxiety disorder (GAD), panic disorder and social and other specific phobias). The outcomes pointed out that ulcers and gastritis predicted the three year incidence of MDD and anxiety disorders, hypertension contributed to dysthymia and social phobia, and arthritis lead to bipolar I, GAD and panic disorder most frequently. In these results the authors controlled not only for socioeconomic variables but for the level of stress too. Without adjustments for the contributions of stress, CHD also seemed to be a significant predictor of MDD, dysthymia, bipolar I and panic disorders and social phobia.

By Katon, Lin and Kroenke (2007) it has been proven that chronically ill people who also have mood or anxiety problems experience higher number of medical symptoms compared to those free of psychological difficulties after adjusting to the severity of the medical illness. This higher number of symptoms and complaints may also lead to a growth in the number of medical examinations which can give an explanation for the increased costs in the treatment of patients with comorbid physical and mental health problems.

Depressive and anxiety disorders are often co-occurring. Scott et al. (2007) found out that the relationship between six chronic conditions, namely ulcer, arthritis, back and
neck problems, heart disease, chronic headache and multiple pains, and co-occurring anxiety and depressive disorders was substantially stronger than between these physical diseases and the mental conditions alone. The solid evidence shows, that among these illnesses those that cause chronic pain have the strongest association with mood and anxiety problems.

### 1.1.2 The effect of mental health problems on physical health

The other side of this bidirectional physical-mental relationship consists of the difficulties that mental health problems pose to physical health. Although this connection cannot be firmly separated, there are research results that show that just as being physically ill can lead to psychological troubles, mental health problems may also be the roots of developing chronic physical conditions.

People living with severe mental health problems such as schizophrenia, major depressive disorder or bipolar disorder report poorer physical health in general and have shorter life expectancy than those without mental health conditions (Fleischhacker et al., 2008; Jones et al., 2004; Robson and Gray, 2008).

In Jones and colleagues’ research (2004) 74% of people with mental difficulties had one, and 50% of them had two or more chronic physical conditions. They show greater vulnerability to cardiovascular, pulmonary, gastrointestinal and endocrine diseases and to some forms of cancer (Jones et al., 2004; Mitchell, 2012; Robson and Gray, 2007).

In Jones’s study pulmonary illnesses was the most prevalent physical disease among people with schizophrenia, bipolar or major depressive disorders. Increased morbidity and mortality rates from cardiovascular diseases (CVDs) are also significant among people with serious psychological challenges, especially in women, who are more likely to also suffer from coronary heart disease than men in the same illness group. Controlling for all known major risk factors of CVDs (e.g. smoking, BMI, blood pressure, cholesterol level, etc.) still does not explain the association between schizophrenia and cardiovascular diseases fully. This means that shared vulnerability and social factors must also play a role behind this relationship of conditions (Fleischhacker et al, 2008).

Depression and anxiety are proven to be risk factors for coronary heart disease, and have an impact on the progress of CVD events, especially after myocardial infarction (MI) (Harvey and Ismail, 2008; Prince et al., 2007). After a depressive episode, the risk of MI is four times higher than without having depression previously (Turner and
Kelly, 2000). In a study, men and women with depression had about 70% increased risk of developing heart disease, and men also had 2.3 times greater chance to die as a result of it. This latter finding was not true in the case of women (Katon & Ciechanowski, 2002). Depression also has a role in all-cause mortality among patients with cancer and COPD (Mitchell, 2012) and was found to be associated with lower mineral bone density among women (Turner and Kelly, 2000).

Digestive and breast cancers are also more frequent in the case of people with schizophrenia, and approximately 15% of them have comorbid diabetes (Robson et al., 2007).

These examples call for attention and must challenge health professionals to address the question of why people with psychosocial challenges are more vulnerable to chronic physical conditions than those with less mental problems. Many of the literature (e.g. Mitchell, 2012; Robson, 2007; Turner and Kelly, 2000) discusses the high rate of unmet medical needs, under-diagnosis of somatic conditions, fewer received preventative care and lower quality of care of people with psychological difficulties as the explanation for the disparity in health. In their review, Viron and Stern (2010) draw attention to the discrepancy between the need for disease screenings (especially for cardio-metabolic conditions) among those with mental difficulties and the under-representation of this group in screening programmes.

Improving access to healthcare for the subgroup of individuals with severe mental challenges and fighting their stigmatization and discrimination may also be a key for reaching a better overall health status in their case (Fleischhacker et al., 2008).

1.1.3 What lies under the relationship of the physical-mental comorbidity?

Patients living with a chronic physical illness have to make countless lifestyle adjustments to be able to harmonize their everyday tasks and manage their conditions at the same time. This might cause additional smaller or more significant burden and stress in their lives depending on the psychological resources and coping mechanisms they are able to utilize (Kiecolt-Glaser, McGuire, Robles, and Glaser, 2002). Constant pain and discomfort can lead to increased stress level or negative feelings. Sometimes they might choose behaviors as a form of coping strategy that are detrimental to health (such as smoking), which have a direct bad influence on physical health. At times, it is the medication that they need to take and its side effects or the complications of the disease that influences their psychological well-being. It can also be the case that the physical- and mental conditions share common biological underlying factors. On the other hand, often times it is the mental difficulties that lead to physical conditions without prior somatic problems, through biological, medication
or lifestyle changes (Katon, 2003). The possible mechanism of this vicious circle, that can easily become a self-perpetuating loop, is going to be unfolded shortly in this subsection.

First of all, it is indispensable to be aware of that the mind (psychological factors), nervous- (through the sympathetic-adrenal-medullary (SAM) system), neuroendocrine- (through the hypothalamic-pituitary-adrenocortical (HPA) axis) and immune systems are intertwined in the human body and continuously communicate with each other with the help of substances called neurotransmitters, hormones, cytokines, neuropeptides, etc. (Ray, 2004; Tausk, Elenkov and Moynihan, 2008). The scientific field that studies this complicated linkage of bodily information systems is called psychoneuroimmunology that was first conceptualized by G. F. Solomon in 1964 (Kiecolt-Glaser et al., 2002).

Having psychosocial coping resources can have a very positive effect on depressive symptoms when a patient has a comorbid chronic disease as well. High self-esteem and being less lonely tend to buffer the chronic disease – depression relationship. Self-efficacy and the feeling of mastery also have positive effects on psychological well-being (Bisschop, Kriegsman, Beekman and Deeg, 2004). In a study (Neeleman, Ormel and Bijl, 2001) low self-esteem, non-satisfactory relationship with parents during childhood and neuroticism were associated with multimorbidity. Patients might also experience a decrease in their coping abilities due to the limitations that their illness imposes on them, thus have a negative effect on the appraisal of the stressors in their lives (Bisschop et al., 2004).

Psychological factors not just mediate, but also moderate the impact of depressed mood on physical health (Sullivan, LaCroix, Russo and Walker, 2001). As an example of this reversed psychosocial–physical health relationship, it has been proven that anger, hostility, the lack of social support and lower educational status have a substantial role in developing coronary artery disease (CAD) (Strike and Steptoe, 2004). The explanation of this direct connection between psychosocial factors and the development of the condition lies within the contributing biological factors (such as hypertension) that are very reactive to mental states and to stress. Different forms of chronic stress (burnout, workload and general stress at work, unemployment and long lasting disturbing exterior conditions) and negative emotions may lead to prolonged inflammation reaction of the body or increased cardiovascular stress reactivity (Kiecolt-Glaser et al., 2002; Strike and Steptoe, 2004) which in turn can lead to chronic physical conditions. This is also due to the constant activation of the
sympathetic nervous system, the elevated level of circulating catecholamines, glucocorticoids and the over-secretion of cortisol and pro-inflammatory cytokines, as a result of chronic stress (Strike and Steptoe, 2004). Not only cardiovascular response is affected by this hyperactivity, but irritable bowel syndrome can also develop as a consequence of it, for example (Roy-Byrne et al., 2008).

Not only stress, but also depression has an impact on the amount of substances affecting the functioning of the immune system and inflammatory processes. The malfunctioning of the HPA and SAM systems is associated with anxiety- and mood problems and with somatic conditions affecting the circulatory-, immune- and metabolic systems (Scott et al., 2009). For example, the elevated level of cytokines can be a common underlying mechanism between mood disorders and diabetes, cardiovascular disease or some forms of cancer (Anisman and Hayley, 2012; Strike and Steptoe, 2004). Also, depression is often accompanied by reduced heart rate variability which can be the cause of cardiovascular events (Viron and Stern, 2010). It has long been discovered, that schizophrenia and diabetes are related, but for quite some time only antipsychotic drugs were seen as the causal factors. Thus, recent research findings show that it is not necessarily the case. Considering other types of medication, research proves that an association exists between drugs used to treat cancer and chronic inflammatory diseases which contain corticosteroids, and symptoms of anxiety and depression (Cohen and Rodriguez, 1995; Roy-Byrne, 2008).

Another possible pathway linking physical and mental health is health behavior. In every case living with a chronic condition requires an increased level of self-management. Increasing the level of physical activity, adhering to a specific diet and medication regimen, keeping track of doctor visits and medical examinations and giving up habits that are detrimental to health (such as smoking) can impose a substantial level of challenge to patients. Patients who have comorbid major depression are three times more likely to perform a non-adherent behavior to these medical recommendations (Katon, 2003; Katon, Lin and Kroenke, 2007). People with severe mental illnesses tend to be less physically active, more obese (Robson and Gray, 2007), consume more alcohol and drugs, smoke more (Cohen and Rodriguez, 1995; Viron and Stern, 2010) or be less likely to quit smoking (Katon, 2003) than those without mental difficulties. Anxiety has also been linked to the above mentioned unhealthy behaviors that are risk factors for developing CVD for example (Roy-Byrne et al., 2008). Thus, lifestyle factors represent an indirect link between the mental-physical relationship.
1.1.4 The biopsychosocial approach

One of the health models which encompasses a complex approach to the determinants of health – including both mental and physical health – and their relationships is the so-called biopsychosocial model (Engel, 1977). This model has its roots in the 1970s (Engel, 1977; Adler, 2009; Gatchel, 2004; Suls and Rothman 2004). The main idea of the model is that the biological, psychological and social determinants of health are inseparable from each other and are closely intertwined, so the origins and the mechanisms of ill health can be only understood by taking all three aspects and their reciprocity into consideration at the same time (Walker, Jackson and Littlejohn, 2004). Concerning this perspective, biomedical aspects alone are not enough for giving explanations for the etiology and progress of the diseases (Engel, 1977). For this reason as well, the biopsychosocial model puts emphasis on well-being and functioning and not only the malfunctions or the diseases of the human body (Walker et al., 2004).

By taking their social and broader environmental contexts (such as healthcare systems) into consideration at the same time it is possible to understand why one person with the same disease experiences severe illness, but the other one only a minor barrier (Engel, 1977). Álvarez, Pagani and Meucci (2012) finds the role of the healthcare systems and the healthcare professionals a crucial contribution of the biopsychosocial model to the systemic thinking about health and illness, while Sperry (2006) says that adding stress to the web of factors that define health made a considerable step towards the better understanding of the interlink between health and illness.

The biopsychosocial model has been criticized since it was mentioned in Engel’s lecture in 1977, mostly for the problematic practical use of it. As a response to the criticism, Suls and Rothman (2004) argues that Engel’s model is a conceptual framework in the first place, giving good basis to a certain paradigm in research, practice and policy making, and directions to a multi systems approach in the prevention, etiology and progression of diseases. The underlying, exact pathways are still being discovered, so this broader theory of the biopsychosocial approach can be used well to derive specific operational and practical models from it. Thus, this widely used theory of health will serve as a general basis for the conceptual model which is later formulated in this work.
1.2 Health in the European Union

The EU’s legislative influence on healthcare related measures is rather restricted. The Treaty on the Functioning of the European Union (TFEU) (European Union, 2012) established that the management of national healthcare systems is the right of the member states (MS). Nevertheless, in article 168 of the TFEU it is stated that the protection of the health of the EU citizens must be a priority across all policies, giving public health an opportunity to harmonize health related actions across the MS. Although the EU can act through binding legislation in the case of a small number of health related topics only (e.g. tobacco consumption, organ donation, cross-border mobility), it is able to influence health policies in the MS by issuing common decisions, opinions, consultations, green- and white papers, etc. (European Union, 2012; Greer, Hervey, Mackenbach and McKee, 2013).

Within the European Commission, the Directorate General (DG) that is responsible for the coordination of health related actions is DG SANCO (DG Health and Consumers). In 2007, a health strategy was set up, named ‘Together for Health’, that set the stage for the second Health Programme that guided public health policies, projects, joint actions and conferences between 2008 and 2013 (European Commission, 2007). Among the objectives, the decision on the second programme (European Parliament and the Council of the European Union, 2007) includes “…attainment of high level of physical and mental health and greater equality in health matters throughout the Community by directing actions towards improving public health, preventing human diseases and disorders and ...combating morbidity and premature mortality.” (p. 4). Health promotion, health security and generating and disseminating health information are also among the main goals of the programme. The health promotion/health determinants strand of this programme acknowledges the importance of addressing health determinants to promote the attainment of better physical and mental health and to prevent diseases (European Parliament and the Council of the European Union, 2007). This is also a highlighted action area among the objectives of the health strategy ‘Together for Health’ (European Commission, 2007). For this reason, the current research will focus on this strand of the priority areas.

The latest, third Health Programme will run between 2014 and 2020 ensuring the continuous realization of the health strategy of the EU (European Parliament and the Council of the EU, 2014). Under its main goals of promoting health and healthy lifestyles, contributing to sustainable health systems, facilitating access to good quality healthcare and protecting its citizens from communicable health threats we can find thematic priorities such as focusing on risky health behaviors, chronic diseases,
active and healthy aging, quality of care, etc. Even though not among these priorities, mental health is also mentioned under the third bullet point of the regulation: “In order to improve the health of the population in the Union and reduce health inequalities, it is essential not to focus only on physical health.” (p. 1).

1.3 Problem statement and goal of the study

If the European Union wishes to contribute to its member states’ work to improve the health status of their citizens in an efficient manner – as it is stated in both, the decision about the establishment of the second (European Parliament and the Council of the EU, 2007) and the regulation on the third (European Parliament and the Council of the EU, 2014) Health programmes, then it has to support the inclusion of the aspect of mental health in its projects aiming at long-term physical health problems (those that are relevant for such a consideration), and vice versa, physical health aspects in the projects and joint actions targeting mental health issues. Thus, it is important to examine what has been done so far to tackle this important issue to be able to determine the missed opportunities of the past and then the steps needed to be made in future policies, plans and projects.

The goal of this paper is to identify if, and to what extent the interrelation of physical and mental health was already included in the EU’s second programme of community action in the field of health between 2008 and 2013. More specifically, this programme’s work plans (WPs), projects and joint actions under the health promotion/health determinants strand are going to be examined with regard to this link. This is going to be based on a conceptual model including all significant underlying factors of the mental – physical health relationship.

2. Methods

In order to address the factors of the underlying determinants of mental and physical illnesses in a more efficient way, the bidirectional and highly complex relationship of mental and physical health should receive particular attention in research as well as in already existing health-related programmes. The purpose of this study is to conduct a content analysis of the work plans and the summaries of health projects and joint actions which were published under the second Health Programme of the EU. Keeping in mind that physical health (primarily chronic conditions) affect mental health status,
and that mental health influences physical health status, this study will focus on the ways in which this relationship was embedded in the health promotion/health determinants strand of the health projects under the EU Health Programme. To this end, a qualitative analysis of the selected work plans, projects and joint actions will be performed. For the better understanding of the terminology in the followings, the structure of the contents of the second Health Programme can found in Figure 1.

Figure 1. Structure of the second Health Programme (own drawing)

The qualitative research design, among others, allows the thorough exploration of a certain selected research topic. When the purpose is to analyze written documents or oral information to answer questions such as ‘what’, ‘how’ and ‘why’, selecting the qualitative strategy of inquiry is adequate (Gree and Thorogood, 2014). It makes it possible for researchers to understand behaviors, systems, processes, needs and cultures (Ritchie and Spencer, 2002). Within this design, applied research deals with the analysis of already existing and identified problems (Green and Thorogood, 2014). As the current study uses EU policy related documents and information as the basis of
the investigation, it can be classified as a small scale applied qualitative policy research.

Ritchie and Spencer (2002) differentiate between four categories of qualitative policy researches: contextual, diagnostic, evaluative and strategic, from which more than one can be present in a study at the same time. The most relevant ones for the case of this thesis is the second and the third categories, which are defined the following way: diagnostic analysis: "examining the reasons for, or causes of, what exists", e.g. "Why services or programmes not being used?"; evaluative analysis: "appraising the effectiveness of what exists", e.g. "How are objectives achieved?" "What barriers exist to systems operating?" (p. 307). They also highlight that the type of research questions define the exact method to be applied in the case of qualitative studies.

Green and Thorogood (2014) add to this that the used theoretical framework influences the formation of the research questions, thus also the method in which they are addressed. Besides the theoretical framework and method, the indicators derived from the conceptual model also have a close connection to the research questions. For this reason, the next section presents the background conceptual model used in this analysis.

Funk and Freeman (2011) argue that both the processes and contents of health policies and plans can be analyzed. Process and content evaluation have to follow different strategies, and result in different outcomes (Collins, 2005). Collins (2005) also reminds us that the content analysis explores a specific policy related issue, and considers what would be the best way to address it and to reach the desired goal of the policy.

In this case, the health projects and joint actions to be examined should reflect the goals that the EU wished to reach by health policy set in the White Paper on the health strategy for 2008-2013 (Commission of the European Communities, 2007), and the decision on the second health programme (European Parliament and the Council of the European Union, 2007). Within the EU, it is the Consumers, health and food executive agency (Chafea, formerly Executive Agency for health and Consumers - EAHC) that is responsible for issuing the yearly WPs and for the selection of the projects for funding. The WPs, but even more so the selected projects should reflect on the priorities of the health strategy and on the actual health action programme. By examining the content of the Health Programme’s WPs and co-funded health projects, it is possible to see if the priorities set in the policy documents is reflected on the implementation level as well, thus whether the projects can really contribute to reach the desired goals, or not.
Van den Broucke, Dargent and Pleutschette (2011) proposed the use of three main categories with 16 criteria that can assure the quality of the projects selected by Chafea. Regarding the first category named ‘Policy and contextual relevance of the project’, one criterion is relevant for the evaluation of the project content, namely: ‘contribution to the Public Health Programme and annual WP in terms of meeting the objectives and priorities’. In the second, ‘Technical quality of the project’ category the second criterion ensures the content validity of the specific project: ‘content specification: aims and objectives, target groups, methods, anticipated effects and outcomes’.

With evidence from the works previously described it is clear that in order to ensure the realization of the health policy and to reach closer to the main objectives, analyzing the content of the activities that are funded under the second Health Programme is a crucial step. This is the reason for the content analysis executed in this study.

2.1 The conceptual model

The evaluation of the different WPs and health projects needs a systematic framework. To aid this, the analysis is based on a conceptual model and its determinants. The needed key search terms are identified with the help of this model.

The reciprocal associations between long term illnesses and mental difficulties validates why it is necessary to use a biopsychosocial perspective when the goal is to design and realize effective health promotion, disease prevention and treatment programmes and projects. A number of conceptual models build on Engels’ biopsychosocial theory (Engel, 1977), but from different perspectives, emphasizing different angles of the concept. For this reason, before determining the main factors of such a conceptual model and carrying out the analysis of the contents of the projects involved in the second Health Programme, a new, general and integrated conceptual model is drawn by the author of this study. It will encompasses all main health determinants that are present separately in already existing conceptual models and are relevant for the physical- mental health interlink.

Cohen and Rodriguez’s model (1995) will serve as the main basis of the new framework. Their concept has a clear and extensive biopsychosocial approach including biological, behavioral, cognitive and social determinants as nodes of the pathways between affective disturbances and physical disorders. They describe the bi-directional relationship of affective disorders and physical illnesses in detail, but from two perspectives, keeping the two directions separate. A unique addition of their work
is that they also differentiate between the biological level factors of illnesses and the behaviors expressed related to them. The depiction of their model can be seen in the Appendix 1 of this paper (Figure 1 and 2).

Gatchel (2004) gives a condensed representation of the biopsychosocial model in his description, which he named the ‘Conceptual model of biopsychosocial interactive processes’. Although he uses chronic pain as an example, his model is very general. He highlights the interactions of factors within the biological level, and unifies them with the different psychological level factors. Afferent and efferent loops between psychological and biological factors and a reciprocal relationship with social mediators are also added. This figure (No. 1) can be seen in the Appendix 2.

The last model which stresses yet another important component of the biopsychosocial approach is Rutter and Quine’s idea from 1993. This generally applicable model draws our attention to the fact that whether someone chooses to pursue a behavior dangerous to health, will heavily depend on the type of coping mechanism this person uses. This specific coping reaction is determined by cognitive and social-affective factors, such as: information, social support and emotion. Thus, the social determinants will have an effect on the health outcomes through psychological, affective and health behavioral pathways (Appendix 3, Figure 1).

Based on these three different aspects of the biopsychosocial ingredients of the physical- mental health relationship, the following conceptual model was created by the author of this study.

The constructed integrated model includes all the main determinants, interaction pathways and their directions involved in the three background models. The determinants laying between physical and mental health status, namely biological, social, health and illness behavior and cognitive, affective and personality determinants contain further factors. Also based on the background models, these are summarized in Table 1. It is important to mention that pathways between the determinants can vary along the type of disease or disturbance in question, as well as its stage or severity.
Figure 2. Pathways linking physical and mental status

The orange pathways represent Rutter and Quines’s model, while the green one signifies the addition from Gatchel’s work. The dashed line stands for the less explicit impact of the ‘Health and illness behavior determinants’ on the ‘Social determinants’.

Table 1. Determinants and factors of the relationship of physical and mental health status (own drawing)

<table>
<thead>
<tr>
<th>Health determinants:</th>
<th>Biological determinants</th>
<th>Health and illness behavior determinants</th>
<th>Social determinants</th>
<th>Cognitive, affective &amp; personality determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors:</td>
<td>Genetics</td>
<td>Nutrition</td>
<td>Life events</td>
<td>Knowledge/Information</td>
</tr>
<tr>
<td></td>
<td>Immune system-</td>
<td>Physical activity</td>
<td>Family environment</td>
<td>Perceived level of stress</td>
</tr>
<tr>
<td></td>
<td>Endocrine system- and</td>
<td>Harmful habits: tobacco-, alcohol- and</td>
<td>Interpersonal</td>
<td>Interpretation of somatic stimuli</td>
</tr>
<tr>
<td></td>
<td>Nervous system functioning</td>
<td>drug-use</td>
<td>relationships/</td>
<td>Coping mechanism/ style</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Treatment adherence</td>
<td>social support/</td>
<td>Self-efficacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Care seeking</td>
<td>-isolation</td>
<td>Self-esteem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mental- and physical functioning</td>
<td>Cultural factors</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pain</td>
<td>Insurance coverage</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Symptom reporting</td>
<td>Treatment experiences/</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>relationship with</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>medical team</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Role impairment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Social expectations</td>
<td></td>
</tr>
</tbody>
</table>

(Based on Cohen and Rodriguez, 1995, Gatchel, 2004 and Rutter and Quine, 1993).
The names of the determinant categories and the factor terms in bold in the table above will make up one part of the list of search terms of the analysis. This inventory of key terms has to be expanded with other important words as far as the aim of the research is concerned, in order to decrease the chance of missing relevant findings. A new, fifth determinant category also needs to be created for more general terms covering ‘Health conditions’. The factors under this section can play a substantial role in contributing to further physical- or mental health problems. This is why it is considered as another group of determinants. The additional terms are the followings (in bold):

Health conditions: Non-communicable, long-term or chronic disease or illness or condition, mental or psychological or psychiatric or psychosocial illness or disorder or problem or disturbance or challenge or difficulty or condition or consequence, anxiety, mood or personality disorder, co- or multimorbidity, disability;
Biological determinants: drug (as medication);
Health and illness behavior determinants: lifestyle;
Social determinants: quality of life, stigmatization, discrimination healthcare provider or system or service;
Cognitive, affective and personality determinants: education.

Completed with the additional search terms, the determinant factors of the mental-physical relationship are going to be searched for in the documents.

2.2 Research questions

Based on the background information and the conceptual model described above, the following research questions can be formulated in order to address the aim of this study and to get a deeper insight about how the physical-mental relationship was included in the work plans, projects ad JAs of the second Health Programme under the health promotion/health determinants strand.

1. Was the relationship of physical- and mental health and/or its determinants (biological-, health and illness behavior-, social and cognitive and personality determinants) addressed in the health promotion/health determinants strand of the work plans of the second Health Programme of the EU, ‘Together for Health’ (2008-2013)?
1/A. Which determinants of the physical-mental relationship are explicitly present under the health promotion/health determinants strand of the WPs between 2008 and 2013?

2. Was the relationship of physical- and mental health and/or its determinants (biological-, health and illness behavior-, social and cognitive and personality determinants) addressed in the projects and joint actions aimed at mental health and chronic conditions of the second Health Programme of the EU, ‘Together for Health’ (2008-2013)? Which are these?

2/A. How many of the ‘health promotion/health determinants’ projects and joint actions focusing on physical health regarding chronic, long-term illnesses also include the aspects of mental health and their common determinants (biological, health and illness behavior, social and cognitive and personality determinants)?

2/B. How many of the ‘health promotion/health determinants’ projects and joint actions focusing on mental health also include the aspects of physical health, with regard to chronic diseases and their common underlying determinants (biological-, health and illness behavior-, social and cognitive and personality determinants)?

3. How do the selected projects and joint actions reflect the mental-physical health relationship determinants and their factors, as outlined by the health promotion/health determinants strand of the work plans?

2.3 Data collection

In order to be able to address the research questions above, the adequate WPs, projects and joint actions have to be determined first. This is going to be done through the website that Chafea set up as a publicly available platform for the health and consumer programmes and the Better Training for Safer Food initiative of DG SANCO: http://ec.europa.eu/chafea/index.html. Here, under the ‘Previous calls’ menu, the WPs of the previous years are available, as well as other documents related to the programme, grouped by years. Similarly, the ‘Project database’ section contains the list of all projects, joint actions, operating grants and conferences selected for co-funding under the first and second Health Programmes. The presentation of most of the selected projects and joint actions can be found under the ‘Publications’ menu as
well, in digital booklet format. The ‘Summary’ of the projects and JAs are used to find the search terms.

2.3.1 Materials

The subjects of the analysis thus will consist of the WPs, projects and joint actions from the years between 2008 and 2013.

Work plan: The health priorities of a given year and the funding criteria are set by the WPs under the Health Programme (Chafea, 2014).

Projects: “A project is a management approach of organizing resources.” (European Commission, n.d.). Health projects selected by Chafea for foundation can largely differ in their areas of action, target groups, and their primary goals, but they can be grouped in three areas of action: health determinants and promotion, health information and finally health security and threats. All projects must be international by including organizations from at least three different countries in its work, promoting of the spread of knowledge and good practices and the share of expertise and resources (Chafea, 2012). A project should also be innovative and last for a maximum of three years (European Commission, n.d.).

Joint Actions: Just like the projects, joint actions are a form of financing instruments that consist of specified plans of actions. They are managed by non-governmental organizations (NGOs), national competent authorities or other public bodies. With their results they must provide an explicit EU added value and conduct a strictly non-profit work for about three years (Executive Agency for Health and Consumers, 2013).

2.3.2 Sample selection

Each year a WP is issued by Chafea reflecting the goals of the current Health Programme. Selection of the WPs for this analysis is based on the term of the Health Programme, thus the WPs of the second Health Programme are selected for analysis in this study: WP of 2008, 2009, 2010, 2011, 2012 and 2013.

The WPs classify the main themes of the public health projects, JAs, conferences and operating grants to be addressed in three main strands: health threats/security, health determinants/health promotion and health information (see Figure 1). As the goal of this thesis is to detect and describe the physical- and mental health related determinants and their relationships, only the priority actions of the second strand shall be examined, and the other two excluded from the study.
The area covered by the different projects and joint actions is still wide within the health determinants/health promotion strand, therefore the ones that match the purpose of this thesis need to be selected. The sample selection process aims to find the relevant projects and joint actions that could or should be rich in information. This is possible to do with the so-called ‘purposive’ sampling technique, which includes cases in the analysis that match certain pre-defined criteria (Neuman, 2006a).

The project database on the Chafea’s website allows one to use different search filters. It is possible to select financing instruments by health programme, year, strand, status, organization name, title, search terms, etc.

**Inclusion and exclusion criteria**

In order to find the most relevant projects and JAs for this study, inclusion and exclusion criteria must be applied. The current work focuses on non-communicable long-term physical diseases and mental health status including their common determinants. Therefore, communicable diseases have to be excluded as well as disorders of genetic origins, since they are also affected by other factors than those included in this study. As far as age is concerned, the target population of the thesis is people above 14 years of age. It has been mentioned in the ‘Introduction’ section, that for research purposes the classification of psychosocial difficulties is common, and most of the evidence of the close, bidirectional link between mental- and physical health status is based on such categorical distinction. Children’s ongoing developmental course, flexibility in life and the influence of adults on them make the question of psychological classification and categorization of normality vs. pathology even more problematic than in the case of adults or young adults (Rutter and Sroufe, 2000; Taylor, 2003). Also, psychological assessment instruments and methods of children under 14 years differ from that of adults, and similarly, their lifestyle determinants and risk factors vary greatly. This is why it is important to handle these different age groups separately.

In this case, selecting the second Health Programme (2008-2013), the health determinants/health promotion strand and projects or joint actions as financial instruments is relevant as the analysis targets the determinants of health, so these are applied. Furthermore, to find the projects and joint actions that target non-communicable chronic diseases and mental disorders, the appropriate search terms are used under the ‘Level 1’ key terms of the Chafea projects database. Like this, the list of projects and JAs can be identified.
2.4 Data analysis

The adequate priority actions of the second strand of the WPs and the summary (including general objectives, strategic relevance and contribution to the public Health Programme, methods and means and expected outcomes sections) of each of the projects and joint actions obtained during the sample selection process is going to be searched for each of the key terms. Priority actions targeting communicable diseases, children or health determinants not relevant for this study (e.g. environmental determinants) will not be covered by this research.

The search is going to include the singular form of the defined key terms (see under ‘Methods’ section, ‘2.1 The conceptual model’), if applicable, both the British and American spelling version of the word, and stems of the words if the ending can vary within the same meaning group. Identifying a search term does not mean the automatic inclusion of it in the following course of the analysis. Whether the mentioning of a target term should be involved in the process of the analysis will be decided by taking the context of the search terms found into account. In every case, the findings need to refer to people with long term physical or health conditions, or people regarding their health behavior or lifestyle determinants.

Both, in the case of WPs and the projects and JAs, the findings are to be summarized in table format. The table on the projects and JAs is going to contain the name of the programmes and the identified determinant categories next to them with indicating their frequencies. The table on the WPs will present the priority actions and their subsections that are named focus points (FPs) in this paper, and whether the factors of the five health determinant groups were addressed by them. In case any one of the determinant factors is identified in a project, JA or WP priority action, that group of determinants will be recognized as ‘mentioned’ or ‘covered’. The section where the key terms were found is also going to be described, as well as the relationship of the determinants within the priority actions of the WPs and the project or the JA.

The obtained tables can give an overview of how thoroughly the WPs and the projects and JAs encompass the net of determinants affecting both mental-, and physical health, and whether they directly or indirectly involve considerations of the two areas.

2.5 Reliability and validity

The two constructs that assure that the process of the research and the obtained results are truthful and credible are reliability and validity (Neuman, 2006b). Reliability and validity in qualitative studies are closely intertwined, but it is just as important to take each of them into consideration separately during the design and process of the study as in the case of quantitative examinations (Golafshani, 2003).
Reliability in qualitative studies means consistency and dependability. In this research the indicators derived from the background theories, the reproducible exact sample selection method as well as the straightforward process of data analysis provides the ground for obtaining consistent, objective and trustworthy results. Validity's core principle in qualitative approach is truthfulness and authenticity (Neuman, 2006b). If the research findings are valid, it means that it reflects reality, and the researcher really measures, in this case describes, what they intend to describe. In the case of the current work, using a conceptual model that is built on formerly accepted and published models insures that the highest level possible of validity is reached.

3. Results

The content of the 6 WPs (European Commission, 2008, 2009a, 2009b, 2011a, 2011b and 2012) concerning the priority actions of the health promotion/health determinants strand and their sub-sections that are relevant for analysis in this study can be seen in Table 1 of Appendix 4. After applying the same inclusion and exclusion criteria for the priority actions and FPs of the WPs that were used in the case of projects and JAs, it was revealed that the WPs contain 20 relevant priority actions altogether within the formerly mentioned strand, with 74 different focus points– or sub-priorities – under them.

Besides the 6 WPs, the sample selection process yielded 16 projects and 3 joint actions that matched the inclusion criteria. The selection process of these financing instruments is depicted in Figure 3 and their properties are summarized in Table 2.

3.1 The relationship of physical- and mental health and its determinants in the work plans

The analysis of the WPs reveals that the link of physical- and mental health is addressed by only one priority action in the WPs. The focus point called “Mental health” under point 3.3.2. of the WP 2010 includes the aspects of both mental- and physical health, as well as their interlink and comorbidity: “Promoting interdisciplinary cooperation between health professionals which addresses the links between mental and physical health and builds on the increasing understanding of their
interdependence. Particular focus is put on identifying possibilities for preventing depression in co-morbidity with physical illness.” (European Commission, 2009, p. 21). This sub-priority recognizes that investing in mental health promotion and illness prevention activities contributes to the improvement of the overall health status of people, as well as to better social outcomes. Here, it is also stated that regional decisions made in policy areas other than that of health can also affect the mental health status of European citizens.

Figure 3. Flow diagram of the selection process of the projects and work plans (own drawing)

(Based on the ‘project database’ of the ‘Health Programme’ menu on Chafea’s website: http://ec.europa.eu/chafea/projects/database.html)
3.2 The determinants connecting physical and mental health in the work plans

As far as the common underlying health determinants are concerned, only two of the WPs cover all five of them (including the key terms belonging under ‘health conditions’), namely WP 2012 and 2013. Although, none of the focus points or priority actions contain all of the determinants at the same time, only on an aggregated level. The WPs of 2009 and 2011 cover three determinant areas, and those of 2008 and 2010 contain factors from four health determinants’ categories. 30 out of the 74 focus points do not touch upon any of the determinant groups included in the study. In some cases this is due to the attention paid to other, more distant underlying determinants of health within the priority actions - that are not included in this analysis -, such as health technology assessment (HTA) (e.g. in the case of focus point 4.2.2.4. in WP 2013), or on scientific and technical support of projects (e.g. focus point 3.2.3.7., WP 2012).

Among the determinants considered, factors under ‘health/illness behavior’ were included in the greatest number of focus points – in 29 cases -, with a major emphasis on ‘alcohol’, ‘tobacco’ and ‘drug’ use, followed by ‘physical activity’, ‘nutrition’, ‘health behavior’ and (healthy) ‘lifestyle’. Illness-related behavioral factors were represented by ‘treatment adherence’ and ‘functioning’, both mentioned once by the sub-sections 4.2.1.1. of WP 2013 and 3.3.3.1. of WP 2012, respectively. Factors of the ‘health conditions’ category are present in 16 FPs, while those of the social determinants are part of 15 FPs. ‘Mental health’ as a health defining condition is addressed by 6 FPs, and as mentioned before, only one describes mental health in relation to ‘physical health’ explicitly. Another sub-priority mentions ‘mental health’ in the same section as ‘chronic conditions’, but not as related factors. Among the health conditions, ‘chronic diseases’ are addressed the most often, followed by the formerly mentioned ‘mental health’, then ‘non-communicable diseases’, ‘disability’, ‘multimorbidity’, ‘functioning’, ‘comorbidity’ and finally ‘physical health’. Social determinants are represented by a wider range of components: ‘social exclusion’, ‘stigma’ and ‘impairment’ refer solely to mental health conditions in the FPs, although the latter one is present as part of the name of an already running, independent project. ‘Cultural factors’ and ‘quality of life’ also appear when mental health is named, as well as paired with addictions and ‘rare diseases’.
<table>
<thead>
<tr>
<th>Work Plans</th>
<th>Name (short)</th>
<th>Financing instrument</th>
<th>Theme</th>
<th>Topic</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WP 2008</strong></td>
<td>PROMISE</td>
<td>Project</td>
<td>Mental Health</td>
<td>Promoting mental health and minimizing mental illness through education.</td>
<td>Finalized</td>
</tr>
<tr>
<td></td>
<td>TENTS-TP</td>
<td>Project</td>
<td>Mental Health</td>
<td>Evidence based practice aimed at traumatic stress.</td>
<td>Reporting</td>
</tr>
<tr>
<td></td>
<td>COMPH</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Standards in health promotion capacity building.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>ENERCA 3</td>
<td>Project</td>
<td>Chronic disease</td>
<td>European Reference Network of Expert Centers in rare anaemias.</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>WP 2009</strong></td>
<td>------------------</td>
<td>---------------------</td>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>------------------</td>
<td>---------------------</td>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>WP 2010</strong></td>
<td>EUREGENAS</td>
<td>Project</td>
<td>Mental Health</td>
<td>Actions against suicide.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>EuroHeart II</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Prevention of and trends in cardiovascular diseases.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>PHWORK</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Promoting healthy work for people with chronic illness.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>EUREMS</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Collection, exchange and analysis data on multiple sclerosis.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>ALCOVE</td>
<td>Joint Action</td>
<td>Mental Health</td>
<td>Prevention and care models in Alzheimer disease and dementia.</td>
<td>Finalized</td>
</tr>
<tr>
<td></td>
<td>EPAAC</td>
<td>Joint Action</td>
<td>Chronic disease</td>
<td>Reduction of cancer burden in the EU.</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>WP 2011</strong></td>
<td>------------------</td>
<td>---------------------</td>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>WP 2012</strong></td>
<td>ICARE4EU</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Care for people with multiple chronic conditions.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>EUROTRACS</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Acute coronary syndromes – cost analysis.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>ACT</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Coordinated-care and TeleHealth services.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>e-CAPACIT8</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Occupational health professionals – aging workforce.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>BENCH-CAN</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Benchmarking comprehensive cancer care.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>EConDA</td>
<td>Project</td>
<td>Chronic disease</td>
<td>Economics of Chronic Diseases.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>MH-WB</td>
<td>Joint Action</td>
<td>Mental Health</td>
<td>Promotion of mental health and wellbeing and prevention of mental illnesses.</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>WP 2013</strong></td>
<td>------------------</td>
<td>---------------------</td>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>MPI-AGE</td>
<td>Project</td>
<td>Chronic disease</td>
<td>&quot;Cost effectiveness of interventions in multimorbid frail persons.&quot;</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>ASSHES</td>
<td>Project</td>
<td>Chronic disease</td>
<td>&quot;Activation of stratification strategies. &quot;</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
‘Health services’ and ‘-systems’ are either placed in sections where ‘chronic’- and ‘non-communicable diseases’ or ‘multimorbidty’ is highlighted as well, or without any other determinant factors under the heading. Finally, within this determinant group ‘social determinants’ are present either alone, or when ‘mental health’ or ‘chronic conditions’ are also described. Cognitive determinants play a part in 8 of the sub-sections of the priority areas, but mostly the terms ‘information’ and ‘education’ represent this determinant group, and only one case (3.3.6. of WP 2008) deals with giving information to patients about diseases, while the others are concentrating on health behaviors or cross border care. Biological determinants appear in only three of the FPs, all of them related to ‘drug (as medication)’ or ‘medicine’ - one in relation to healthy aging, and two in connection with rare diseases.

3.3 The relationship of physical and mental health and its determinants in the selected projects and joint actions

Out of the financing instruments included in the research, 3 projects and 2 JAs put mental health in the focus, the rest concentrating on chronic diseases as the main theme. Interestingly, there are no projects or JAs from the years of 2009 and 2011 that would match the inclusion criteria of the study. Each of the projects and JAs were searched for the key terms, just like in the case of the WPs. This time the number of factors mentioned within the determinant categories was also identified. Based on a color scheme (Table 3), Table 4 presents the results of the search. In this table, the first column of each determinant group shows the number of factors present, and the second one counts each factors as many times as they were mentioned altogether. Darker colors were assigned to those factors which were mentioned or appeared more often in the summary of the projects or JA’s.

Table 3. Color scheme used for the classification of the findings in the projects and joint actions (own drawing)

<table>
<thead>
<tr>
<th>Number of findings</th>
<th>Health conditions</th>
<th>Biological determinants</th>
<th>Health and illness behavior determinants</th>
<th>Social determinants</th>
<th>Cognitive and personality determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 4. Summary of the results of the analysis of the projects and joint actions (own drawing)

<table>
<thead>
<tr>
<th>Name</th>
<th>Health conditions</th>
<th>Biological determinants</th>
<th>Health/ Illness behavior determinants</th>
<th>Social determinants</th>
<th>Cognitive and personality determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROMISE</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>TENTS-TP</td>
<td>2</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>COMPHP</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENERCA 3</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>EUREGENAS</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>EuroHeart II</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>PHWORK</td>
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</table>

None of the project or joint action summaries cover the aspects of all 5 determinant categories. However, all of them were mentioned in at least a couple of projects or JAs. On average, the 19 financing instruments include factors from 2 determinant groups, the numbers ranging from 0 to 3. The project ‘e-CAPACIT8’ does not include any of the search terms in the text of its summary, as it is focusing on the training of occupational health professionals and not on the individuals with specific health risks or health conditions.

Projects and JAs including aspects of health conditions focus either on mental health or physical health issues, but never on both of them at the same time or on their interactions. Mainly those five projects and JAs include perspectives on mental health that were found under the ‘mental health’ focus within the health promotion/health determinants strand of the projects and JAs, but these do not include any physical conditions or factors related to them explicitly either. The only project belonging to the ‘chronic conditions’ group that mentions the importance of mental health is COMPHP, which wishes to develop professional competencies for health promotion capacity building in general.
‘Comorbidity’ and ‘multimorbidity’ are mentioned in four of the projects. These are all related to older age or aging in the project descriptions, but they are not further specified. In the case of ICARE4U, ‘multimorbidity’ is linked to chronic illnesses and integrated care, but it is not explained what is meant by this term exactly. Thus, as stated before, none of the projects or JAs with a focus on mental health includes physical health problems explicitly, and vice versa, none of the financing instruments targeting chronic disease addresses psychological perspectives.

Four of the projects (ENERCA 3, EUREMS, EUROTRACS and e-CAPACIT8) and the EPAAC joint action targeting chronic conditions do not use any of the general terms describing health conditions. This is due to their specific focus, so they name the illnesses, e.g. anaemias, cancer and multiple sclerosis, specifically, and not under common umbrella terms. It is the social determinants that are included in the project descriptions the most often, in seven cases. The components that are most frequently referred to are ‘quality of life’ (ASSHES, EUREMS, EUROTRACS and PHWORK) and ‘healthcare services/systems and providers’ (ASSHES, EUREMS, ACT, ICARE4U and PHWORK). The potential ‘social isolation’ of the patients is mentioned solely by ENERCA 3, and nothing else is mentioned from the circle of the social determinants in the project and JA summaries. The prevalence of health/illness behavior components is very mixed in the chronic illness related projects and JA. The project dealing with the so-called ‘telehealth’ (ACT) is concerned about the ‘patients’ adherence’ to the health interventions, while the joint action against cancer (EPAAC) highlights the importance of healthy ‘lifestyle’ in cancer prevention. Two projects, EConDA and EUROTRACS includes steps to tackle ‘smoking’ prevalence as the risk factor of chronic conditions, and the EuroHeart II project stresses the importance of connecting cardiovascular diseases to risk factors like ‘physical activity’ and ‘nutrition’. Lastly, the project of PHWORK works towards the goal of improving the ‘functioning’ of employees. ‘Drug’ as medication represents the group of biological determinants in two projects: in MPI-AGE (as reducing unnecessary medication use within its goals) and in EUREMS (as broadening the current knowledge on drugs used for multiple sclerosis). Factors from the cognitive, affective and personality determinants group were not taken into consideration at all in any of the projects or in the joint action.

The projects and the joint actions targeting mental health address the following psychological issues: traumatic stress, depression, suicide and Alzheimer disease, while the primary goal of the joint action on Mental Health and Well-being is mental health promotion in general. All five of the projects and JAs include some of the
factors of social determinants. In this regard, EUREGENAS is worth mentioning, as it includes the most, 4 different factors among the 19 projects and JAs. It finds ‘social support’ (groups), de-stigmatization’, ‘cultural’ adequacy and mental ‘healthcare providers’ as important elements of the project against suicide. TENTS-TP, PROMISE and MH-WB include the aspects of ‘social inclusion’ and ‘exclusion’ in their work, while ALCOVE puts emphasis on the healthcare systems’ and ‘family’ carers within this group of determinants. It is only the PROMISE project that considers the effect of behaviors detrimental to health (namely alcohol- and drug abuse) as closely related to mental health problems. As far as the cognitive components are concerned, both the TENTS-TP and EUREGENAS projects add to their summaries that ‘stress’ plays a role in the conditions they focus on, but none of the other factors from this determinant group are cited in the mental health related projects and JAs.

3.4 The relation of the selected projects and joint actions to the work plans

While the category of health/illness behavior is the one that gets the most attention and is covered most thoroughly by the WPs, it is only in the third place after the health conditions and social determinants in the joint actions and WPs. All of the factors included in the WPs are present in the 7 projects and JAs dealing with this determinant group, except for ‘health behavior’ itself.

In the case of WPs, projects and JAs the biggest variety of social factors are related to the topic of mental health. In general as well, this group of determinants is taken into account often in the projects and joint actions. Interestingly, while the factor of ‘quality of life’ is taken into consideration with regard to psychological well-being and rare diseases in the WPs it is only addressed by projects that focus on chronic diseases. The other factors of this group are present in the projects and JAs the way the WPs refer to them, except for the case of ‘impairment’ which is not addressed by any of the projects and JAs, and those of ‘social support’ and ‘inclusion’ that are mentioned by mental health related financing instruments but not under the WPs.

The greatest discrepancy is seemingly in the way that the cognitive, affective and personality determinants are considered by the WPs and the financing instruments. These factors are quite disregarded by the WPs and the projects and JAs as well. As it can be read above, the ‘information’ and ‘education’ factors represent this category in the WPs - mostly in connection with health determinants -, while the two mental health related projects that considers cognitive factors at all link ‘stress’ to the main line of their work.

In the case of biological determinants the picture is simple: only the medication-related terms appear in both kinds of texts, and then only two and three of them.
With regard to the health conditions, it is interesting to see that the way they are put in the WPs is clearly reflected in the topic selection of the projects and joint actions. For example, in the WP 2008 it is only ‘mental health’ and ‘mental disorder’ that is explicitly present from this factor group. Thus in turn, the projects of 2008 only mention these terms as well. Also, as the terms ‘non-communicable’ and ‘chronic’ diseases appear in the WP in 2010, they get a place among the projects from the same year as well. ‘Comorbidity’, on the other hand is mentioned in the WPs before it appears in the projects, while the opposite is true to the case of ‘multimorbidity’.

4. Discussion

It has been proven in a number of studies that people with long-term physical diseases experience significantly more difficulties in their mental health than those without such issues. The prevalence rates of common mental problems (such as depression and anxiety) are 2-3 times higher in the case of individuals living with chronic physical diseases such as musculoskeletal- (e.g. rheumatism), respiratory- (e.g. COPD), cardiovascular diseases (e.g. coronary artery disease) or cancer, than among the general population (Härter et al., 2007). This is also true for the flip side of this equation. Jones and colleagues (2004) found that 74% of the patients with severe mental illnesses in their study sample had at least one chronic physical illness as well. Whatever may lay behind the bi-directional link of this physical-mental health relationship, the consequences are undeniably present: the avoidable exacerbated burden of the diseases on the individuals and many living with co-morbidities.

Because of the high importance of this health issue, the current study has examined whether the second Health Programme of the EU acknowledged co-occurring physical and mental health problems or not, and if it took their common underlying determinant factors into consideration on the level of the individuals. The outcomes show, that the work plan of 2010 initiated making steps towards a practical consideration of the intertwined nature of physical and mental problems by highlighting it under FP 3.3.2.5. During the further analysis it has been found that neither of the projects or joint actions under the strand of health promotion/health determinants with the main theme of mental health or chronic diseases paid explicit attention to this aspect of health conditions.
Preventing and influencing the mental-physical co-morbidity is not only possible by tackling the health conditions themselves, but by addressing their common determining factors. 41% of the reviewed focus points within the work plans and one of the projects from 2012 (e-CAPACIT8) did not mention any of these factors that were identified by the help of the key terms derived from the conceptual model of the study, though. In the case of the work plans this is due to the broad sample and the considerable range of topics covered within these documents, including those that deal with health-related issues from a wider perspective, such as reduction of health inequalities, support for disease information networks, etc. Regarding e-CAPACIT8, the main focus of this project is the health professionals, thus it is not relevant concerning the subjects of the determinant factors. But because the inclusion and exclusion criteria did not cover this perspective sufficiently, the project received a place in the list of selected financing instruments.

As far as the five health determinants of the conceptual model depicted in the ‘Methods’ section are concerned (namely ‘health conditions’, ‘biological health determinants’, ‘health and illness behavior determinants’, ‘social determinants’ and ‘cognitive, affective and personality determinants’), their presence and distribution in the WPs as well as in the projects and JAs are rather uneven within and between the type of information surces. First of all, there was no one project or JA that would cover them all at the same time, so the physical-mental relationship is not captured completely by them in an indirect way either.

While it is the group of health and illness behaviors that was covered by the focus points in the greatest number, it could have been included in many more of the projects and JAs, as only 37% (6 projects and 1 JAs) of them recognized one or two factors of this category in any way. The importance of health behaviors that are detrimental to health has been recognized as risk factors for both physical and mental health (e.g. Katon, 2003). As just one example of many, Taylor at al. (2014) discovered in a meta-analysis that quitting smoking significantly decreases the level of depression, anxiety and stress among healthy individuals as well as among those with mental or physical problems. So, apart from reducing the risk for having chronic physical diseases, smoking cessation is beneficial for the functioning of the mind too, and by this, the development of further stress-related conditions or mental issues caused by tobacco induced cancer could be prevented. Despite this connection between health behavior and mental status only one mental health themed project included such factors. It is nevertheless possible, that under the themes of ‘lifestyle’ that did not get a place in this study, this above described link gets more significant recognition.
Mentioning the factors of social determinants in the WPs and financing instruments seems to be more important compared to other determinant groups in general, and especially in relation to mental health compared to physical health conditions. Nevertheless, they play a great role in defining the physical aspect of health status as well (WHO, 2008), thus this attention on social factors should be further expanded to better cover chronic diseases as well.

It has been found that there is a considerable lack of factors with regard to the cognitive, affective and personality determinant group in both the work plans and the financing instruments. What is more, this perspective is completely missing from the projects aimed at chronic diseases. By addressing psychological resources such as coping, self-efficacy, self-esteem and resiliency to stress it would be possible to mitigate the adverse effects of chronic illnesses on the status of mental health and vice versa (Bisschop et al., 2004). Providing information to patients on their disease and health status would also be crucial (Larson, Nelson, Gustafson and Batalden, 1996), but is often missed in the case of patients with mental disabilities (Viron and Stern, 2010).

The search for biological determinants did not yield many results either. From the factors included in this group, only ‘drug as medication’ has been seen in a couple of chronic disease-related projects. Although the literature on psychoneuroimmunology supports the importance and link of the nervous-, immune- and endocrine systems in the physical-mental relationship (Kiecolt-Glaser, 2009; Kiecolt-Glaser et al., 2002), and there is also evidence that some types of medications used for the treatment of chronic diseases such as corticosteroids play a role in developing psychological problems like depression (Bhangle, Kramer and Rosenstein, 2013), these may be too specific for the types of documents and texts (summaries) researched.

4.1 Limitations

The purpose of this study has been the mapping of the health determinants of the physical-mental intertwined relationship in the second Health Programme. For this reason, the analysis wished to cover and scan for a rather wide range of target factors, rather than to perform an in-depth analysis. Also, evaluating the projects and JAs and interpreting the quality of them was not among the aims either.

There are a number of limitations to this work with regard the results. First of all, since only two of the projects and JAs have been finalized until the analysis of this research started, the only information source concerning the content of these activities was the summarized description of them provided in the project database on Chafea’s website. These descriptions might give limited information and may not include every
aspect of the planned work. Nevertheless they must encompass the essence of the activities.

Another drawback may be the fact that although the factors try to cover all important areas of the determinant categories, they represent a selection based on the conceptual model and the information in the literature in the ‘Introduction’ part. Thus, even though terms like ‘social services’ or ‘integrated care’ would be good representatives of the relevant determinant categories, they did not get to be part of the list of factors. This causes a certain amount of unavoidable loss of otherwise relevant findings. The nature of descriptions also affects the scope of their contents. For instance, ALCOVE, EPAAC or EUROTRACS targets specific diseases, so they do not use umbrella terms for these and the factors of the ‘health conditions’ category could not be applied. On the other hand, the text belonging to COMPHP uses very broad terms and wording of the aims in general, thus only one factor was identifiable from all five categories. It has also been noticed that some possibly relevant projects (e.g. ProYouth) of the health promotion/health determinants strand of the Health Programme were left out of the initial selection ‘pool’, thus they did not get a place in the study. This is due to that they are not placed under neither of the ‘mental health’ nor the ‘chronic diseases’ labels, but under a different category of the same strand.

For these reasons the findings need to be handled with caution, and far-reaching consequences cannot be drawn from the results as the picture on projects and JAs cannot be complete.

5. Conclusions

There has been a rather spacious room left for covering an even greater scope of underlying factors of physical and mental health conditions and for linking them explicitly within the second Health Programme. The reflection of the goals set out in the WPs could also be more in line in the projects and JAs, to execute a more systematic way of addressing these aims. A more through consideration of the mental-physical relationship could not only serve one group of people with both kinds of conditions, but it could also contribute to the prevention of additional diseases in those who are dealing with one or multiple illnesses already. Introducing a more holistic focus in the WPs and taking it into consideration during the selection of the future projects and JAs could have a special importance during these
times after the economic crisis. The crisis has left an increased need for psychological and medical support behind as the rates of unemployment rose and the health coverage of people decreased as well as their income and the Member States’ spending on healthcare services (Eurofound, 2013; Uutela, 2010). Neglecting the interacting nature of physical and mental health and performing budget cuts on health services targeting problems that are in the intersection or underlying the related diseases is actually very expensive in contrast with the common beliefs. The healthcare of individuals with physical and mental problems costs at least 45% more to the healthcare provider than treating patients with the physical illness alone (Naylor et al., 2012).

Investing in health promotion and disease prevention thus should be emphasized especially in the case of those individuals who already have mental or chronic physical difficulties. With the recently launched third Health Programme, the EU has a special opportunity to include important topics in the FPs of the WPs, projects and JAs that have not received extensive attention before. This could include a more holistic and less divided consideration of the relationship of mental and physical health.
References


Appendices

Appendix 1

Figure 1. Cohen and Rodriguez’s model on the relationship between affective disturbance and physical disorder (1995, p. 376.).

Figure 2. Cohen and Rodriguez’s model on the relationship between Physical disorder and affective disturbance (1995, p. 378.).
Appendix 2

Figure 1. The conceptual model of the biopsychosocial interactive processes involved in health and illness (Gatchel, 2004, p. 798).
Appendix 3

Figure 1. Variables between social determinants and health outcomes (based on Rutter and Quine, 1993, figure from Albery and Munafó, 2008, p. 11).
### Table 1. Priority actions and Focus points of the strand ‘health promotion/health determinants’ selected for analysis from the work plans of the second Health Programme (2008-2013).

In the table the colors signify the five health determinants. Red: health conditions, green: biological determinants, blue: health/illness behavior, yellow: social determinants, purple: cognitive, affective and personality determinants.

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<td><strong>WP 2008</strong></td>
<td>3.3.1. Work in rare diseases will focus on continued action to improve knowledge and facilitate access to information on these diseases. Preparation of initiatives to increase healthy life years across the life cycle and tackle health inequalities</td>
<td>3.3.3.1. Mental health</td>
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<td>3.3.2. Reduction of health inequalities between EU regions</td>
<td>3.3.3.2. Sexual health</td>
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<td>3.3.3. Improving mental health and healthier living</td>
<td>3.3.3.4. Nutrition, overweight and obesity related health issues</td>
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<td>3.3.4. Addiction prevention (Annex — Point 2.2.1)</td>
<td>3.3.4.1. Smoking prevention and tobacco control</td>
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<td>3.3.6. Action on rare diseases</td>
<td>3.3.4.2. Alcohol strategy</td>
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<tr>
<td><strong>WP 2009</strong></td>
<td>3.3.1. Foster healthier ways of life and the reduction of health inequalities</td>
<td>3.3.4.3. Preventing drug use and drug related harm</td>
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<td>3.3.1.4. Reduction of health inequalities</td>
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<td>3.3.1.5. Supporting cooperation on issues of cross-border care</td>
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<td>3.3.2. Promote healthier ways of life and reduce major diseases and injuries by tackling health determinants</td>
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<td>3.3.2.8. Prevention of major and rare diseases</td>
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<td><strong>WP 2010</strong></td>
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<td>3.3.1.1. Promoting Health in All Policies approach</td>
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<td>3.3.1.2. Public health capacity building</td>
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### WP 2011

#### 3.2.1. Identifying the causes of, addressing and reducing health inequalities and promoting investment in health in cooperation with other EU policies and funds

1. **3.2.1.1.** Reducing health inequalities: preparation for action plans and structural funds projects
2. **3.2.1.2.** European Review of Social Determinants and the Health Divide: collaboration with WHO to produce policy guidelines and tools for addressing health inequalities

#### 3.2.2. Addressing health determinants to promote and improve physical and mental health and taking action on key factors such as nutrition and physical activity, tobacco, and alcohol

1. **3.2.2.1.** Monitoring the implementation of the European Strategy for Nutrition and Physical Activity jointly with WHO
2. **3.2.2.2.** Communication campaign on tobacco prevention
3. **3.2.2.3.** Study on the tobacco industry’s new marketing, sales and product strategies
4. **3.2.2.4.** Administrative agreement with the Joint Research Centre for the provision of scientific policy support for the implementation of the Tobacco Products Directive and FCTC
5. **3.2.2.5.** Good practice on brief interventions to address alcohol use disorders in primary health care, workplace health services, emergency care and social services
6. **3.2.2.6.** Evaluating the structures put in place to implement the EU Alcohol Strategy
7. **3.2.2.7.** Scientific and technical support to the implementation of EU policies in the field of nutrition, alcohol and Health Forum
<table>
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<td>3.2.1. Support to the European Innovation Partnership on active and healthy ageing</td>
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<td>3.2.1.1. Fostering health provision for migrants, the Roma and other vulnerable groups</td>
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<td>3.2.1.2. Identifying best practices in tobacco control to reduce health inequalities</td>
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<td>3.2.1.3. Study on patient empowerment in relation to the Cross-border Healthcare Directive</td>
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<td>3.2.1.4. Forecasting health workforce needs for effective planning in the EU</td>
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<td>3.2.2. Identifying the causes of, addressing and reducing health inequalities within and between Member States in order to contribute to prosperity and cohesion; supporting cooperation on issues of cross-border care and patient and health professional mobility</td>
<td>3.2.2.1. Mental health and well-being</td>
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<td>3.2.2.3. Evaluation of the Strategy for Europe on Nutrition, Overweight and Obesity-related health issues</td>
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<td>3.2.2.4. Action to prevent and reduce harm from alcohol</td>
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<td>3.2.3. Addressing health determinants to promote and improve physical and mental health and taking action on key factors such as nutrition and physical activity, and on addiction-related determinants such as tobacco and alcohol</td>
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<tr>
<td>4.2.4.3</td>
<td>Scoping study on communication action addressing chronic diseases</td>
</tr>
<tr>
<td>4.2.4.4</td>
<td>Support to rare diseases registries and networks in view of their sustainability</td>
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<tr>
<td>4.2.4.5</td>
<td>Support to an information network on lungmesothelioma</td>
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