



Lifebrain

D 5.3 Policy reviews on cognitive and mental well-being across all age groups

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PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
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Executive Summary

D 5.3 Policy reviews on cognitive and mental well-being across all age groups

Early-life factors such as pre- and perinatal health, nutrition, education, socioeconomic status in childhood, mental health in young age, physical activity, and drug and alcohol consumption, may have profound impact on cognitive function, and mental health later in life (e.g. low cognitive function, anxiety, depression, dementia). Thus, it is of critical importance that health policies address the impact of early-life factors on later life and include prevention strategies sufficiently comprehensive to encompass the whole life span of an individual.

This deliverable outlines the main results from a review of key European and international health policies. The policies were reviewed to investigate whether they take into consideration risk factors influencing brain, cognitive and mental health, discuss their impact on later life, and outline prevention strategies across the life span.

The results described in this deliverable will serve as a basis for suggesting improved strategies and concrete guidance to policymakers and practitioners. This will be done in deliverable D5.8 (Policy reviews to advance well-being across all age groups due M56).

List of acronyms/ abbreviations

EU	European Union
NCDs	Non-communicable diseases
NIPH	Norwegian Institute of Public Health
OECD	Organisation for Economic Co-operation and Development
UCAM	University of Cambridge
UiO	University of Oslo
UOXF	University of Oxford
VUmc	VU University Medical Centre Amsterdam
WHO	World Health Organization

1. Introduction

1.1 Deliverable description

Task 5.3 Enhancing policy delivery on ‘personalised’ health opportunities for European citizens.

Lead:

NIPH; Participants: All (M6-M60)

From the Lifebrain project proposal, we cite: *“Selected National/European policies will be reviewed and policymakers engaged to determine the appropriateness and relevance of project results and how these results can lead to promotion of policies on ‘personalised health’ opportunities for European citizens. Determined across targeted countries, measures will identify strategies for increased up-take (i.e. health personnel/patient groups etc.) of preventable measures and mitigation steps for decline in cognitive and mental health. Such analyses will also indicate the minimisation and maximisation, respectively, of social, economic and environmental effects on well-being, and recommendations presented for intervention measures (self/assisted measures), prevention (lifestyle changes, etc.) and guidance to practitioners will be listed in deliverables D5.3 and D5.8. Deliverable D5.3 will be edited to be presented as a ‘practice manual’, disseminated to stakeholder groups and made available to public institutions and citizens.”*

Lifebrain focuses on identifying factors that determine brain health, cognitive function and mental health at different stages of life. The aim is to establish a solid foundation of knowledge to understand how to optimize brain health, cognitive function and mental health throughout the lifespan. Early-life factors such as pre- and perinatal health, nutrition, education, socioeconomic status, mental health in young age, physical activity, and drug and alcohol consumption may have profound impact on cognitive function and mental health later in life (e.g. low cognitive function, anxiety, depression, dementia). Thus, health policies should address the impact of early-life factors on later life and include prevention strategies sufficiently comprehensive to encompass the whole life span of an individual.

This deliverable outlines the main results from a review of key European and international health policies. The policies were reviewed to investigate whether they take into consideration resilience and risk factors influencing brain health, cognitive function and mental health, discuss their impact on later life, and outline prevention strategies across the life span.

The results described in this deliverable will serve as a basis for suggesting improved strategies and concrete guidance to policymakers and practitioners. This will be done in deliverable D5.8 (Policy reviews to advance well-being across all age groups due M56).

1.2 Objectives of the deliverable

The objective of D5.3 is to:

- Select key European and international health policies
- Explore to which extent these health policies recognize the impact of risk factors, such as perinatal health, nutrition, education, socioeconomic status, mental health in young age, physical activity, and drug and alcohol consumption, on brain health, cognitive functioning and mental health in later life
- In case the impact of risk factors are recognized, evaluate the extent to which policy strategies and recommendations take these factors into consideration

1.3 Collaboration among partners

A working group was established to work on the deliverable consisting of members of different work packages. The group members are:

- Isabelle Budin Ljøsne, WP1 leader
- Christian A. Drevon, WP5 leader
- Klaus Ebmeier, WP3 leader
- William Baaré, WP2 leader
- Barbara Friedman, adm. coordinator of Lifebrain
- Kristine B Walhovd, Lifebrain Coordinator
- Roger Kievit, researcher
- Rik Henson, researcher

2. Description of activities

The working group proceeded in a stepwise fashion.

2.1. Identification of risk factors

First, the group discussed which risk factors may influence brain health later in life, based on the current literature and research conducted in Lifebrain [1]. The group identified the following factors:

Pre- and perinatal health

Factors such as low birth weight, prematurity, low head circumference at birth, and maternal stress and infections during pregnancy, may impact neurological development [2-6].

Nutrition

Nutritional deficiency in early life is thought to increase susceptibility to many aging-related disorders including cognitive decline, learning disabilities and mental diseases [7].

Education

Less time in education (defined as no secondary school education) is estimated to account for 7.5% of the risk of developing dementia later in life [8]. In contrast, higher levels of education and occupational attainment are associated with a lower incidence of dementia.

Socioeconomic status

Low socioeconomic circumstances in childhood are associated with cognitive decline in late age [9]. Social isolation has been identified as a risk factor for dementia.

Mental health in young age

There is some evidence that e.g. depression and trauma during early lifetime negatively affects brain and cognitive development. A potentially larger risk may be associated with the shared underlying (vascular) aetiology of late life depression and dementia [10]. Similarly, major psychiatric illness in early and mid-life is often associated with poor health care, limited concordance with treatment and prevention of physical illness (hypertension, obesity, diabetes), which in turn may add further risk of late life brain disease (e.g. dementia, anxiety, panic disorders) [11-13].

Physical activity

Lack of physical activity can be associated with poor cardio-vascular health and consequently poor brain health in later life. Interestingly, this may be aggravated by apathy and reduced activity in the run-up to a diagnosis of dementia [14].

Drug and alcohol consumption

Even 'normal' levels of alcohol consumption are identified as a potential risk of subsequent cognitive impairment and dementia, associated with brain changes [15-16].

2.2 Selection of key health policies

Health policies are many and vary in mandate area (e.g. local, regional, national, international level), design, and level of ambition. The working group decided to focus on reviewing key health policies at European and international level as this is the main level of focus of the Lifebrain project.

The World Health Organization (WHO), WHO Europe, the Organisation for Economic Co-operation and Development (OECD) and the European Union (EU) are key organizations publishing health policies at the European and international level. Health policies developed by these organizations normally do not encompass regional and national policy variations, but are overarching policies often used as a reference to develop regional and national policies. Thus, they may be seen as representatives of the type of approaches taken by most policymakers.

The working group decided to use the WHO health policy definition:

“Health policy refers to decisions, plans, and actions that are undertaken to achieve specific health care goals within a society. An explicit health policy can achieve several things: it defines a vision for the future, which in turn helps to establish targets and points of reference for the short and medium term. It outlines priorities and the expected roles of different groups; and it builds consensus and informs people.” http://www.who.int/topics/health_policy/en/

A structured online search was conducted using Google to identify health policies that are publicly available and published in English. The searches were limited to health policies published by the European Union, WHO Europe, WHO International and the OECD. Policies may be referred to as “policy”, “strategy”, “white paper” or “action plan.”

To have a broad representation of health policies covering different stages of life, the following categories of policies were selected:

- Pre- and perinatal care policies
- Youth health policies
- Mental health policies
- Healthy ageing policies
- Dementia policies
- Life-style related policies
- Other health policies (e.g. social determinants of health)

2.3. Review of policies

The policies were scanned to investigate whether they:

- Mention risk factors such as pre- and perinatal health, socio-economic status in childhood education and mental health in young age, nutrition, physical activity, drug and alcohol consumption;
- Discuss the impact of these risk factors on cognitive and mental health on later life;
- Promote a life-span approach to risk reduction and prevention;
- Refer to or discuss “brain health”;
- Encourage cross-sectorial collaboration to address health issues.

3. Results

In total, 31 policies published between 2002 and 2018 were identified. The policies are listed in Appendix 1.

3.1. Pre- and perinatal care policies

Four policy statements published between 2009 and 2018 were identified. All policy statements are published by the WHO (International/Europe).

The policies primarily focus on the first years of life and acknowledge the importance of providing conditions for good and healthy development as early as possible, also before birth.

Three policies state the importance of investing in early development to promote physical and mental health of individuals, although they focus more on discussing what to do during the first years of life rather than discussing late life.

The WHO Europe *European strategic approach for making pregnancy safer* (2009) primarily focuses on providing babies a healthy start in life but does not elaborate on this topic. The *WHO Born too soon policy* (2012) recognizes that preterm birth increases risk for neurodevelopmental problems that may impact quality of life and normal functioning. The *WHO Global Strategy for Women’s and Children’s Health* (2015) encourages nutritional interventions (such as exclusive breastfeeding for 6 months, use of micronutrient supplements) to provide good conditions for child development.

The *WHO Nurturing care policy* (2018) discusses the importance of “building brains” during the early weeks of pregnancy for the neurological development of the child. Preventing child maltreatment and exposure to risk factors such as toxins and pollutants is “critical to saving brains, enhancing early childhood development, and laying the foundations for lifelong health and well-being”. The policy acknowledges that: “adverse childhood experiences can have strong long-lasting effects on brain architecture, psychological functioning, mental health, health risk behaviours.”

3.2. Youth health policies

Two policies published between 2009 (EU policy) and 2014 (WHO Europe) were identified.

The *EU Strategy for Youth* (2009) acknowledges main risk factors influencing health, including the “lack of physical exercise, unprotected sex, tobacco, and alcohol and drug abuse.” The policy does not specifically discuss the impact of these risk factors on later life and brain or mental health, but it calls for greater *cross-sectorial* collaboration concerning youth policies and other policy areas such as education, employment, inclusion and health.

The WHO Europe *Investing in children* policy (2014) recognizes that “adult health and illness are rooted in health and experiences in previous stages of the life-course”. It emphasizes the importance of addressing risk factors early in life as they affect later-life. Mental health is mentioned, noting that “exposure to adversity at a young age is a preventable risk factor for mental disorders”. The policy statement acknowledges that risk factors such as overweight and obesity are associated with potential problems related to health and well-being in later life. Other risk factors such as “the use of use of alcohol, tobacco and other substances” are mentioned and said to be linked to “long-term negative effects in later life”. The policy encourages an *intersectoral* and *life-course* approach to child and adolescent health by national and regional governments and ministries of health.

3.3. Mental health policies

Eight policy statements published between 2005 and 2016 were identified. Five statements were published by the WHO (International/Europe) and three by the EU.

Most mental health policies recognize or mention risk factors of relevance for mental health such as education, socio-economic status, and unhealthy behaviour (nutrition and physical activity are less frequently mentioned). Some of the policies also emphasize the importance of having a life-span perspective when thinking about mental health, although they do not specifically discuss the

impact of early-life health on mental health in later life. The policies do not specifically discuss “brain health.”

The WHO Europe “*Mental Health Declaration for Europe*” (2005) recognizes the need for comprehensive evidence-based mental health policies in the member countries and does not discuss the specifics of these policies.

The WHO Europe “*Policies and practices for mental health in Europe*” (2008), co-funded by the European Commission, gives an overview of policies and practices for mental health in 42 Member States in the WHO European Region. This report does not aim to discuss risk factors but rather is focused on how health care services affect mental health, anti-stigma work, and how to help people with mental health disorders.

The WHO Europe “*Impact of economic crises on mental health*” (2011) acknowledges that “the foundations of good mental health are laid during pregnancy, infancy and childhood.” It states that “relatively high frequencies of common mental disorders are associated with poor education, material disadvantage and unemployment.” It notes that “the effects of extreme poverty on children include deficits in *cognitive, emotional and physical development*.” Most risk factors are mentioned in the policy (not physical activity) although the policy is focused on socio-economic factors.

The WHO international “*Mental health action plan*” (2013) is focused on the importance of socio-economic factors for mental health and early-life intervention. It stresses the need for endorsing a *multi-sectorial approach* to mental health and engaging stakeholders. Other risk factors such as alcohol and stress are mentioned but not discussed in detail.

The WHO Europe “*Mental health action plan*” (2015) recognizes the importance of a lifespan perspective on mental health and addressing risk factors such as “income deprivation, lack of educational achievement, unemployment, drug and alcohol misuse” throughout life. It also recognizes that “mental and physical health have to be seen in unity.” It encourages promoting “lifelong learning” to improve “literacy, numeracy and basic skills among those who are most deprived and excluded.”

The EU Green Paper “*Improving the mental health of the population*” (2005) was the first mental health policy statement in Europe. The policy acknowledges most risk factors for mental health including education, physical activity and low social and economic status, and stresses the importance of early-life prevention. It calls for *multi-sectorial collaboration* to promote mental

health although this is not discussed in depth. The policy encourages the design of a Union-wide mental health strategy.

The *“European Pact for Mental Health and Well-being”* (2008) acknowledges that “the foundation of life-long mental health is laid in the early years.” Most risk factors such as education, physical activity, “excessive drinking, drug abuse and social exclusion, depression and stress” are mentioned in the policy.

The *“European Framework for Action on Mental Health and Wellbeing”* (2016) recognizes that “the very foundations of mental health are laid down early in life.” However, it is focused on a limited number of intervention fields and “...leave out certain aspects, such as mental health in pre-school age and in the elderly.” It recommends that EU member states promote schools as a setting to focus on mental health, prevent mental disorders, and facilitate early recognition of mental disorders. The policy encourages strengthening “mental health promotion and mental disorder prevention throughout life by actions through healthcare systems and in partnership with relevant non-health sectors.”

3.4. Healthy ageing policies

Four policies published between 2002 and 2015 were identified. All the policies were published by the WHO (International/Europe).

The ageing policies mostly focused on enabling the elderly to maintain a healthy life as long as possible. They acknowledge the importance of early-life risk factors although their main focus is on discussing strategies that can be implemented during mid-life (e.g. WHO Europe Policy brief 10) or late life. Several policies recognize the need for adopting a life-span approach to enable healthy ageing.

The WHO *“Active Ageing Policy Framework”* (2002) argues for providing a continuum of care as people grow older. The importance of nutrition, education, mental health, and addressing socio-economic factors and smoking throughout life is acknowledged, although the policy pinpoints that “the rate of decline is largely determined by factors related to adult lifestyle – such as smoking, alcohol consumption, levels of physical activity and diet as well as external and environmental factors.”

The WHO Europe *“Policy brief 10”* (2009) discusses several risk factors, although focus is on prevention concerning these risk factors at old age rather than discussing potential lines of action during early life. For instance, the importance of physical activity is acknowledged but prevention is

placed at middle age. The policy outlines that “exercise in midlife may also have the potential to reduce cognitive decline in old age, for example by reducing vascular damage to the brain.”

The policy, however, acknowledges that “issues facing ageing populations demand measures that combine support for elderly people with policies addressed to younger generations who will benefit subsequently from early intervention.”

The WHO Europe *“Policies and priority interventions for healthy ageing”* (2012) primarily is focused on the prevention of falls, physical activity in old age, influenza vaccination, and geriatric health care. In this policy, early-life factors are not mentioned. However, it is acknowledged that “an individual’s health and level of activity in older age depends on his or her living circumstances and actions over a whole lifespan.”

The WHO *“World report on ageing and health”* (2015) mentions that “cognitive functions vary greatly among people and are closely related to years of education.” Reference is made to the “brain health across the life course” program, an initiative led by the Indonesian Ministry of Health’s Centre of Health and Intelligence to build cognitive resilience and functioning across the life course (from pregnancy to old age) [6]. The policy outlines that “strategies to reduce the burden of disability and mortality in old age by enabling healthy behaviours and controlling metabolic risk factors can therefore start early in life and should *continue across the life course*.” Other risk factors such as for instance nutrition and physical activity are mentioned but the focus is primarily on discussing their importance in old age.

3.5. Dementia policies

Three policy statements published between 2012 and 2016 were identified. Two statements were published by WHO Europe and one by the OCED. It should be noted that Europe does not have a joint policy for dementia.

The policies mention most risk factors of relevance although they primarily focus on addressing these risk factors during midlife. There is some recognition of the need for cross-sectorial collaboration and for brain health promotion in national policies.

The WHO *“Dementia - A public health priority”* (2012) policy refers to some risk factors related to cardiovascular diseases such as “diabetes, midlife hypertension, midlife obesity, smoking, and physical inactivity.” However, the focus is primarily on risk factors at midlife. The policy states that “there is quite convincing evidence from high-income countries that higher levels of education and occupational attainment are associated with a lower incidence of dementia”. The policy discusses prevention but focuses on interventions at midlife.

The WHO *“Global action plan on the public health response to dementia”* (2016) provides a list of most risk factors for dementia (e.g. physical inactivity, obesity, unbalanced diets, tobacco use, harmful use of alcohol, mid-life depression, low educational attainment, social isolation and cognitive inactivity). The policy focuses on improving the lives of people with dementia and therefore does not have a strong focus on prevention. It shortly mentions “increasing the public’s knowledge of risk factors associated with dementia” to promote healthy lifestyles and risk-reduction behaviour. The policy recognizes that to enable “a comprehensive and coordinated response to dementia,” *collaboration among all stakeholders* is needed, including “engagement at the government level of all relevant public sectors” (i.e. health, social services, education, employment, justice, and housing), as well as partnerships with relevant civil society and private sector entities.

The OCED *“Addressing Dementia”* (2015) policy focuses on encouraging research on dementia and making health data available for research, to discover a cure and helping people who live with dementia. It shortly mentions risk factors such as years of formal education and cognitive training, physical exercise, and smoking, although it does not elaborate on this. The policy mentions that “governments around the world should incorporate *brain health promotion* messages in their public health campaigns, rather than developing dementia-specific strategies.”

3.6. Life-style related policies

Seven policies published between 2006 and 2017 were identified, of which four were published by WHO and three by the EU. The policies address the following risk factors: tobacco, nutrition, obesity, drugs, and alcohol.

The policies primarily focus on reducing unhealthy behaviours. Although some of them recognize the impact of unhealthy behaviours on mental and cognitive health later in life, they do not elaborate on this topic.

The WHO *“European Action Plan for Food and Nutrition policy”* (2006) is focused on improving nutrition and food safety in early life, ensuring a safe, healthy and sustainable food supply, and providing comprehensive information and education to consumers. It aims to reduce the prevalence of diet-related non-communicable diseases (NCDs) but does not specifically discuss the impact of unhealthy nutrition on mental/cognitive health.

The WHO *“Global strategy to reduce the harmful use of alcohol”* (2010) mentions that alcohol consumption can lead to neuropsychiatric disorders. However, the policy’s focus is primarily on reducing the harmful use of alcohol.

The WHO Europe *“Food and Nutrition Action Plan”* (2014) is focused on enabling equitable access to nutrition throughout the life-course to fight inequitable distribution of overweight, obesity, diet-related noncommunicable diseases (NCDs) and malnutrition. It does not specifically discuss the impact of nutrition on mental/cognitive health.

The WHO Europe *“Tobacco free generations”* (2017) discusses the impact of tobacco use on mental health. It also acknowledges the impact of tobacco on the brain as “nicotine use can also impair development of the prefrontal cortex, further undermining its function.”

The EU *“Strategy for Europe on Nutrition, Overweight and Obesity related health issues”* (2007) discusses how to make healthy food available and reduce obesity. It acknowledges in its introduction that unhealthy diet and obesity may cause a range of mental health conditions but it does not elaborate on this topic.

The EU *“Action plan on drugs”* (2013) primarily focuses on the reduction of drug use. It recognizes that drug consumption can be related to mental health problems. Mention is made that “there is also a growing body of evidence to suggest a positive association between physical activity and mental health, mental development and cognitive processes.”

The EU *“Action Plan on Childhood Obesity”* (2014) shortly acknowledges the impact of obesity on mental health and the neurodevelopment of the child, although it does not discuss its impact on older age.

3.7. Other health policies

Three policy statements published between 2011 and 2015 were identified; they were published by the WHO. The policies address the following topics: National noncommunicable diseases (NCDs), social determinants of health, and health.

The WHO *“Social determinants of health Sectorial briefing Series – Education”* (2011) recognizes the importance of education for development, including mental health. It states that “the early childhood years are the most important developmental phase of the lifespan.”

The WHO Europe *“Health 2020 - A European policy framework and strategy for the 21st century”* (2013) refers to most risk factors such as smoking, diet, alcohol consumption and physical activity, and their general impact on health. It recognizes that “supporting good health and its social determinants *throughout the lifespan* leads to increasing healthy life expectancy and a longevity dividend, both of which can yield important economic, societal and individual benefits”.

The WHO Europe “*Action plan for the prevention and control of NCDs*” (2015) recognizes that “mental health is important for effective NCD prevention and management because it interacts with physical health in many ways and is a common comorbidity”. It refers to a number of risk factors including “unhealthy diets, physical inactivity, and overweight/obesity and air pollution” and recommends early prevention, in particular of mental health disorders, “given that half of mental health disorders start before the age of 14 years”.

4. Conclusion

Most health policy statements discuss key risk factors that are of relevance for brain health such as education and mental health in young age, nutrition, physical activity, pre- and perinatal health, socio-economic status in childhood, drug and alcohol consumption. However, they often do not elaborate on the impact of these risk factors on mental and cognitive health later in life health. In general, the policies do not refer to risk factors as “early-life” risk factors but rather as general “risk factors”. A general observation is that the impact of risk factors is primarily acknowledged in the newer policies, suggesting that the importance of addressing risk factors is slowly being acknowledged.

Brain health is not a well-developed concept in the policies. Most policies neither mention the brain nor discuss implications of risk factors for the brain, with some exceptions such as, for instance, the policies for pre-and perinatal health, and some mental health policies. The OECD policy for dementia is the only policy specifically stating that: “governments around the world should incorporate *brain health promotion* messages into their public health campaigns”.

Most health policies seem to endorse a life-span approach to addressing risk factors and laying the groundwork for good health, although what a life-span approach entails usually is not fully articulated. In addition, the policies do not systematically translate such a life-span approach into prevention and intervention strategies that encompass the whole life span. Instead, they propose strategies, which focus on the period of life that is the main area of interest of the policy. For instance, pre-and perinatal policies acknowledge the impact of early-life factors on cognitive and mental health across ages but focus on making recommendations for prevention and intervention that target foetuses, new-borns and young children. Similarly, healthy-ageing and dementia policies also recognize the impact of risk factors on mental and cognitive health but focus on intervention and prevention at middle age rather than propose to start prevention at young age. Late-life policies seem to be primarily reactive (i.e. propose intervention after disease manifestation) rather than proactive (i.e. propose prevention at early stages of life).

Few policies (e.g. the youth policies and some mental health policies) encourage collaboration across sectors, for instance, between the health sector, education, and social services, to address health issues. Most policies rather focus on their area of interest (e.g. nutrition, alcohol consumption) and lay out strategies for addressing specific health issues.

5. Next steps

Results from this policy review will be used to provide concrete guidance to policymakers regarding how to develop strategies that take a more preventive/lifespan approach and that at the same time build bridges across different sectors (e.g. health, education). This will be done in deliverable D5.8 (Policy reviews to advance well-being across all age groups due M56).

6. References

1. Healthy ageing - A systematic review of risk factors. Department of Health Service & Population Research. King's Global Health Institute Reports Research Report 2018 No. 1:
http://athlosproject.eu/wp-content/uploads/2018/05/KIOPPN_HealthyAgeing-Report2018.pdf
2. Walhovd KB, Krogstad SK, Amlien IK, et al. Neurodevelopmental origins of lifespan changes in brain and cognition. *Proc Natl Acad Sci U S A*. 2016 Aug 16;113(33):9357-62.
3. Nygaard E, Slinning K, Moe V, et al. Behavior and Attention Problems in Eight-Year-Old Children with Prenatal Opiate and Poly-Substance Exposure: A Longitudinal Study. *PLoS ONE* 11(6): e0158054.
4. Estes ML, McAllister AK. Maternal immune activation: Implications for neuropsychiatric disorders. *Science*. 2016;353(6301):772-7.
5. Scola G, Duong A. Prenatal maternal immune activation and brain development with relevance to psychiatric disorders. *Neuroscience*. 2017;346:403-8.
6. Trempe CL, Lewis TJ. It's Never Too Early or Too Late-End the Epidemic of Alzheimer's by Preventing or Reversing Causation From Pre-birth to Death. *Front Aging Neurosci*. 2018 Jul 12;10:205.
7. Kang Y and al. Nutritional Deficiency in Early Life Facilitates Aging-Associated Cognitive Decline. *Curr Alzheimer Res*. 2017;14(8):841-849.
8. Livingston G et al. Dementia prevention, intervention, and care. *Lancet*. 2017 Dec 16;390(10113):2673-2734.

9. Murray AD, McNeil CJ, Salarirad S, et al. Early life socioeconomic circumstance and late life brain hyperintensities--a population based cohort study. *PLoS One*. 2014 Feb 18;9(2):e88969
10. Singh-Manoux A, Dugravot A, Fournier A, et al. Trajectories of Depressive Symptoms Before Diagnosis of Dementia: A 28-Year Follow-up Study. *JAMA Psychiatry*. 2017 Jul 1;74(7):712-718.
11. Singh-Manoux A, Dugravot A, Shipley M, et al. Obesity trajectories and risk of dementia: 28 years of follow-up in the Whitehall II Study. *Alzheimers Dement*. 2018 Feb;14(2):178-186.
12. Donley GAR, Lönnroos E, Tuomainen TP, et al. Association of childhood stress with late-life dementia and Alzheimer's disease: the KIHD study. *Eur J Public Health*. 2018 Jul 17.
13. Lupien SJ, McEwen BS, Gunnar MR, Heim C. Effects of stress throughout the lifespan on the brain, behaviour and cognition. *Nat Rev Neurosci*. 2009 Jun;10(6):434-45.
14. Sabia S, Dugravot A, Dartigues JF, et al. Physical activity, cognitive decline, and risk of dementia: 28 year follow-up of Whitehall II cohort study. *BMJ*. 2017 Jun 22;357:j2709.
15. Sabia S, Fayosse A, Dumurgier J, et al. Alcohol consumption and risk of dementia: 23 year follow-up of Whitehall II cohort study. *BMJ* 2018;362:k2927.
16. Topiwala A, Allan CL, Valkanova V, et al. Moderate alcohol consumption as risk factor for adverse brain outcomes and cognitive decline: longitudinal cohort study. *BMJ*. 2017 Jun 6;357:j2353.

7. Appendix 1

Pre- and perinatal care policies		
European strategic approach for making pregnancy safer: Improving maternal and perinatal health	WHO Europe	2009
Born Too Soon: The Global Action Report on Preterm Birth	WHO et al	2012
Global Strategy for Women's, Children's and Adolescents' Health 2016-2030	WHO	2015
Nurturing care for early childhood development: a framework	WHO	2018
Youth health policies		
An EU Strategy for Youth – Investing and Empowering	EU	2009
Investing in children: the European child and adolescent health strategy 2015–2020	WHO Europe	2014
Mental health policies		
WHO Europe Mental Health Declaration for Europe Facing the Challenges, Building Solutions	WHO Europe	2005
Policies and practices for mental health in Europe - meeting the challenges	WHO Europe	2008
Impact of economic crises on mental health	WHO Europe	2011
Mental health Action Plan 2013-2020	WHO Europe	2015
Mental Health Action Plan 2013–2020	WHO	2013
Improving the mental health of the population: Towards a strategy on mental health for the European Union	EU	2005
European Pact for Mental Health and Well-being	EU	2008
EU Joint Action on Mental Health and Well-being - European Framework for Action on Mental Health and Wellbeing	EU	2016
Healthy ageing policies		
Policy brief 10: How can health systems respond to population ageing?	WHO Europe	2009
Policies and priority interventions for healthy ageing	WHO Europe	2012
Active Ageing A Policy Framework	WHO	2002
World report on ageing and health	WHO	2015
Dementia policies		
Dementia - A public health priority	WHO	2012
Global action plan on the public health response to dementia 2017 - 2025	WHO	2016
Addressing dementia	OECD	2015

Life-style related policies		
European Action Plan for Food and Nutrition policy 2007-2012	WHO Europe	2006
European Food and Nutrition Action Plan 2015-2020	WHO Europe	2014
Tobacco free generations	WHO Europe	2017
Global strategy to reduce the harmful use of alcohol	WHO	2010
Strategy for Europe on Nutrition, Overweight and Obesity related health issues	EU	2007
EU Action plan on drugs 2013-2016	EU	2013
EU Action Plan on Childhood Obesity 2014-2020	EU	2014
Other health policies		
Social determinants of health Sectoral briefing Series - Education	WHO	2011
Health 2020 - A European policy framework and strategy for the 21st century	WHO Europe	2013
Action plan for the prevention and control of NCDs 2016-2025	WHO Europe	2015

8. URL addresses for policies

Pre and perinatal care policies

WHO European strategic approach for making pregnancy safer: Improving maternal and perinatal health

http://www.euro.who.int/_data/assets/pdf_file/0012/98796/E90771.pdf

WHO Born Too Soon: The Global Action Report on Preterm Birth

http://www.who.int/pmnch/media/news/2012/preterm_birth_report/en/index1.html

WHO Global Strategy for Women's, Children's and Adolescents' Health 2016-2030

<http://www.who.int/life-course/partners/global-strategy/globalstrategyreport2016-2030-lowres.pdf>

WHO Nurturing care for early childhood development: a framework

http://www.who.int/maternal_child_adolescent/child/draft2-nurturing-care-framework.pdf?ua=1

Youth health policies

An EU Strategy for Youth – Investing and Empowering

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009DC0200&from=EN>

WHO Europe Investing in children: the European child and adolescent health strategy 2015–2020

http://www.euro.who.int/_data/assets/pdf_file/0010/253729/64wd12e_InvestCAHstrategy_140440.pdf?ua=1

Mental health policies

WHO Europe Mental Health Declaration for Europe Facing the Challenges, Building Solutions

http://www.euro.who.int/_data/assets/pdf_file/0008/88595/E85445.pdf

WHO Europe Policies and practices for mental health in Europe - meeting the challenges

http://www.euro.who.int/_data/assets/pdf_file/0006/96450/E91732.pdf

WHO Europe Impact of economic crises on mental health

http://www.euro.who.int/_data/assets/pdf_file/0008/134999/e94837.pdf?ua=1

European Mental health Action Plan 2013-2020

http://www.euro.who.int/_data/assets/pdf_file/0020/280604/WHO-Europe-Mental-Health-Acion-Plan-2013-2020.pdf

WHO Mental Health Action Plan 2013–2020

http://apps.who.int/iris/bitstream/handle/10665/89966/9789241506021_eng.pdf;jsessionid=DFD33C2423A1EBFE5DBB88275F6689DB?sequence=1

European Commission Green Paper: Improving the mental health of the population: Towards a strategy on mental health for the European Union

https://ec.europa.eu/health/ph_determinants/life_style/mental/green_paper/mental_gp_en.pdf

European Pact for Mental Health and Well-being

https://ec.europa.eu/health/sites/health/files/mental_health/docs/mhpact_en.pdf

EU Joint Action on Mental Health and Well-being - European Framework for Action on Mental Health and Wellbeing

[http://www.mentalhealthandwellbeing.eu/assets/docs/publications/Framework%20for%20action_19jan%20\(1\)-20160119192639.pdf](http://www.mentalhealthandwellbeing.eu/assets/docs/publications/Framework%20for%20action_19jan%20(1)-20160119192639.pdf)

Healthy ageing policies

WHO Europe Policy brief 10: How can health systems respond to population ageing?

http://www.euro.who.int/_data/assets/pdf_file/0004/64966/E92560.pdf

WHO Europe Policies and priority interventions for healthy ageing

http://www.euro.who.int/_data/assets/pdf_file/0006/161637/WHD-Policies-and-Priority-Interventions-for-Healthy-Ageing.pdf?ua=1

WHO Active Ageing A Policy Framework

http://apps.who.int/iris/bitstream/handle/10665/67215/WHO_NMH_NPH_02.8.pdf?sequence=1

WHO World report on ageing and health

http://apps.who.int/iris/bitstream/10665/186463/1/9789240694811_eng.pdf?ua=1

Dementia policies

WHO Dementia - A public health priority

http://www.who.int/mental_health/publications/dementia_report_2012/en/

WHO Global action plan on the public health response to dementia

<http://apps.who.int/iris/bitstream/handle/10665/259615/9789241513487-eng.pdf;jsessionid=D29BBE4ABE91564AC714D2D3BF2E6093?sequence=1>

OECD Addressing dementia

<http://www.oecd.org/health/addressing-dementia-9789264231726-en.htm>

Life-style related policies

WHO European Action Plan for Food and Nutrition policy 2007-2012

http://www.euro.who.int/_data/assets/pdf_file/0017/74402/E91153.pdf

WHO European Food and Nutrition Action Plan 2015-2020

http://www.euro.who.int/_data/assets/pdf_file/0008/253727/64wd14e_FoodNutAP_140426.pdf

WHO Europe Tobacco free generations

http://www.euro.who.int/_data/assets/pdf_file/0008/343376/20170428_WHO-TobaccoFreeGeneration-DRAFT09.pdf?ua=1

WHO Global strategy to reduce the harmful use of alcohol

www.who.int/substance_abuse/publications/global_strategy_reduce_harmful_use_alcohol/en/

EU White Paper on Strategy for Europe on Nutrition, Overweight and Obesity related health issues

http://ec.europa.eu/health/archive/ph_determinants/life_style/nutrition/documents/nutrition_wp_en.pdf

EU Action plan on drugs 2013-2016

<http://www.emcdda.europa.eu/system/files/attachments/5468/15.%20EU%20Action%20Plan%20on%20Drugs%202013-2016.pdf>

EU Action Plan on Childhood Obesity 2014-2020

https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/childhoodobesity_actionplan_2014_2020_en.pdf

Other health policies

WHO Social determinants of health Sectoral briefing Series – Education

http://apps.who.int/iris/bitstream/handle/10665/44737/9789241502498_eng.pdf?sequence=1&isAllowed=y

WHO Europe Health 2020 - A European policy framework and strategy for the 21st century

http://www.euro.who.int/_data/assets/pdf_file/0011/199532/Health2020-Long.pdf?ua=1



WHO Regional Office for Europe Action plan for the prevention and control of NCDs 2016-2025

http://www.euro.who.int/_data/assets/pdf_file/0008/346328/NCD-ActionPlan-GB.pdf?ua=1