The public health workforce: An assessment in the Netherlands

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INTRODUCTION

This introductory chapter first provides background information on public health, the public health workforce, essential public health operations and public health in the Netherlands. The aim and outline of this thesis are presented at the end of this chapter.

PUBLIC HEALTH

Public health is often defined as ‘the science and art of preventing disease, prolonging life, and promoting health through the organised efforts of society’. (1) The focus on preventive measures through collective interventions distinguishes public and preventive care (public health) from providing medical care (curative sector). Public health is an essential part of the healthcare system and concentrates on the health of the population as a whole. As all patients are part of the population in fact medical care occurs within the context of public health. (2, 3)

In many high income countries, the rising burden of chronic diseases, ageing populations, increasing health inequalities and growing health care costs poses challenges for health systems to improve and maintain population health. (4-6) The health of populations and the individuals within that population is influenced by a range of factors both within and outside the individual’s control (7, 8), as described by the so-called rainbow model of Dahlgren and Whitehead (D&W), see Figure 1. (9) Starting from the inner layer, the model shows: 1) fixed factors, such as age and gender, 2) individual lifestyle factors, 3) social and community factors, 4) living and working conditions, and 5) general socioeconomic, cultural and environmental factors. This model illustrates that health is not only influenced by individual lifestyle choices and an individual’s ability to adapt and self-manage, but also by collective factors that determine the context of an individual, as reflected by layers 3, 4 and 5. For example, the 2008 economic crisis in Europe has pronounced unintended effects on public health; the number of suicides and infectious disease outbreaks has increased since. (10) So, improving or maintaining population health requires medical care as well as public health interventions.

To deliver effective public health services, a qualified public health workforce and appropriate allocation of that workforce are necessary. Therefore there is a need to understand the composition and trends in the public health workforce. (11-14)

Public health workforce

In several high income countries, e.g. the United States of America (USA) and Australia, insight in the public health workforce is limited. (15, 16) Limited insight in the total public health workforce makes workforce planning impossible. To provide evidence on which to base decisions for workforce planning and development, appropriate data on the size and composition of the workforce and the services provided are needed. Around 2000, the Centers for Disease Control and Prevention in the USA (CDC) and national partners developed a strategic plan for public health workforce development. (17, 18) Part of that plan was a list with priority research topics. On top of that list was and still is ‘monitoring the size and composition of the workforce’. In the USA, the CDC strategic plan has been a driver for the growth of public health workforce research.

Insight in the public health workforce is also lacking in Europe. A study into the public health capacity in the EU performed in 2010-2011 showed that a clearly distinguishable workforce for public health has neither been defined nor formally established in the vast majority of the EU Member States. (19) Because of the limited data on the availability and distribution of the public health workforce in Europe, the World Health Organisation Europe (WHO Europe) launched an action plan to strengthen public health capacities and services in 2012. (20) Defining, assessing and strengthening the public health workforce are among the key priority areas.

Both the US and WHO Europe documents stress that more research is needed to be able to monitor the size and composition of the public health workforce. There are still a number of unsolved issues that complicate this monitoring. The first is related to the often indistinct boundaries of the public health sector. Public health, as part of the health care sector, has many interlinks with the medical care workforce. Part of the services delivered by medical care professionals in fact constitutes delivery of public health services, for example general practitioners executing the national influenza vaccination program. Outside the health care sector, also sectors such as the social welfare or the educational sector are involved in public health with social workers and teachers providing health promotion or other public health services. The multidisciplinary nature of the public health workforce constitutes again a factor that complicates workforce enumeration. Due to the many factors influencing health different professional disciplines are involved in public health. (19, 12, 21-23) Only for a few disciplines, like physicians, dentists and sometimes nurses, compulsory professional registers exist. Other disciplines, for example dieticians or health promotion specialists do not have such registries.

Public health workforce enumeration

Previous efforts to enumerate the public health workforce were using existing data sources. However, the limitations of using existing databases for public health workforce enumeration are known and have been emphasized. (15, 24-26) For instance, different job titles of public health professionals for the same kind of jobs are a drawback, and not all job titles are accurately labelled as ‘public health’ in the different data sources. (27) Also, registers use different definitions of public health workers, different disciplines are often registered in different registries and not all disciplines or workplace settings are represented in the databases. (28, 29) A recent study into the federal workforce at the CDC combined the data of two different data sources to characterize the public health workforce. An additional shortcoming of this method was that the existing data sources do not contain demographic information or education and professional training characteristics of the workforce. (30)
Essential public health operations
To overcome the indistinct boundaries and the multidisciplinary nature of the public health workforce as drawbacks for public health workforce studies, the services provided by public health professionals have been used to define the workforce. In 1994, the USA defined ten essential public health services, as a framework for public health activities that should be undertaken. (31) In 2012 the World Health Organisation in Europe (WHO Europe) followed and defined ten essential public health operations (EPHOs). (20) EPHOs describe the main tasks of public health and can be used as a unifying and guiding basis to monitor and evaluate policies, strategies and actions for reforms and improvement in public health. EPHOs have also been used to support the development of public health curricula. (32)

In most public health workforce studies the EPHOs were the basis to define the public health workforce as “all those responsible for providing any of the 10 essential services of public health”. Selections of the organizations in which they work and of specific job titles, such as public health nurse or public health manager, were used to further operationalise the definition of the public health workforce for research purposes. The ten EPHOs are shown in Table 1.

PUBLIC HEALTH IN THE NETHERLANDS
Public health organisation
The Dutch minister of Health, Welfare and Sport is responsible for public health. By law, the Public Health Act, all Dutch municipalities have the obligation to provide pre-specified public health services and to support a local public health service. (33) There are about 400 municipalities in the Netherlands which are served by 25 local public health services. All local public health services have a number of uniform tasks, as specified in the law. Examples of those tasks include preventive youth health care, infectious disease control, health promotion and environmental public health. From the perspective of the EPHOs this means that local public health services take care of ‘surveillance of population health and wellbeing’ (EPHO 1), ‘health promotion’ (EPHO 4), ‘disease prevention’ (EPHO 5), ‘monitoring and response to health hazards and emergencies’ (EPHO 2), ‘assuring sustainable organisational structures’ (EPHO 8) and ‘assuring governance for health and wellbeing’ (EPHO 6).

Table 1 | Essential public health operations, WHO Europe

<table>
<thead>
<tr>
<th>Description</th>
<th>Example</th>
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<tbody>
<tr>
<td>1</td>
<td>Surveillance of population health and wellbeing; to feed information to health needs assessments, health impact assessments and to planning for health services</td>
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<tr>
<td>2</td>
<td>Monitoring and response to health hazards and emergencies; in order to monitor health hazards so that risks can be assessed.</td>
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<tr>
<td>3</td>
<td>Health protection, including environmental occupational, food safety and others; to use monitoring data to protect health from diseases and environmental risks and hazards.</td>
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<tr>
<td>4</td>
<td>Health Promotion, including action to address social determinants and health inequity; to promote population health and well-being by addressing inequalities and the broader social and environmental determinants</td>
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<tr>
<td>5</td>
<td>Disease prevention, including early detection of illness; to prevent disease through preventive actions.</td>
</tr>
<tr>
<td>6</td>
<td>Assuring governance for health and wellbeing; to ensure that public health services are well governed and maintain accountability, quality and equity.</td>
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<tr>
<td>7</td>
<td>Assuring a sufficient and competent public health workforce; to ensure that there is a relevant and competent public health workforce sufficient for the needs of the population.</td>
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<tr>
<td>8</td>
<td>Assuring sustainable organisational structures and financing; to ensure sustainable organisations and financing for public health to provide efficient, effective and responsive services.</td>
</tr>
<tr>
<td>9</td>
<td>Advocacy communication and social mobilisation for health; to support leadership and advocacy for community engagement and empowerment.</td>
</tr>
<tr>
<td>10</td>
<td>Advancing public health research to inform policy and practice; to ensure that research findings are used to improve evidence-informed policy and practice.</td>
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</table>

Complementary to local public health services, other local and national organisations provide public health services, including academic research groups conducting public health research and thus providing the scientific basis of public health practice (EPHO 10). The National Institute for Public Health and Environment (‘RIVM’) contributes significantly to public health by conducting public health research and advising the national government on public health policy. National training and education institutes such as the Netherlands School of Public and Occupational Health, contribute to public health by developing public health curricula and offering training programmes (EPHO 7). Innovation and knowledge institutes support the health of specific population groups.
or public health topics. The national center for youth health care (NCJ) can serve as an example. The NCJ supports youth health care practice by developing guidelines and aggregating knowledge.

**Population health status**

Public health has contributed significantly to population health in the Netherlands. Noteworthy successful public health interventions over the past 40 years include the national child immunisation programme (RVP), prevention of HIV/AIDS, anti-smoking measures, safety belts in cars, prevention of burns and the implementation of national organised screening programmes for breast, cervical and colorectal cancer. (34) Nevertheless, the current state of population health in the Netherlands offers important challenges for public health. The current life expectancy of Dutch men of 79 years is among the highest in the European Union. With 83 years, the life expectancy of Dutch women is in the middle range in the EU and the life expectancy will probably continue to rise in the coming years in the Netherlands. (35) However, the wide inequalities in life expectancy across socio-economic classes are persistent. Life expectancy of Dutch people with low levels of education is around 6 years less than the life expectancy of people with high levels of education. In terms of life expectancy in self-perceived good health, the difference between the lowest and the highest educational groups is 19 years and this difference has been quite constant over the years. Reduction of socioeconomic gaps in health has remained a major challenge for public health.

Chronic diseases such as mental disorders, cardiovascular conditions and cancer caused the largest burdens of disease in 2011 in the Netherlands, see Table 2. Half of this burden can be attributed to unhealthy behaviour, like smoking, excessive alcohol use, sedentary behaviour and overweight and may thus essentially / theoretically be preventable. Among these, smoking remains the major cause of death and illness by far (causing 13% of the disease burden), see Table 3. (35) To reduce the burden of chronic diseases, healthier behaviours and environments need to be promoted and supported, which substantiates again the importance of public health for population health.

<table>
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<tr>
<th>Table 2</th>
<th>Ranking diseases causing the largest burden of disease in the Netherlands , 2011*</th>
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<tr>
<td><strong>Burden of disease</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mental disorders</td>
</tr>
<tr>
<td>2</td>
<td>Cardiovasculare disease</td>
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<tr>
<td>3</td>
<td>Cancer</td>
</tr>
<tr>
<td>4</td>
<td>Injuries</td>
</tr>
</tbody>
</table>

(34) * RIVM, Volksgezondheid Toekomst Verkenning 2014

**Public health workforce in the Netherlands**

The above mentioned trends in population health and the corresponding public health needs will impact the public health services and the public health workforce. Therefore, also in the Netherlands, there is a need to understand the size and composition of the public health workforce, in order to secure sufficient qualified and appropriate allocation of that workforce to maintain and improve population health.

Like in other countries, total size and composition of the public health workforce in the Netherlands is unknown and a standardized system for regularly and systematically collecting public health workforce data is lacking. This is remarkable because public health contributes significantly to population health, and public health is a public service with a high societal impact. The lack of evidence based public health workforce governance limits the potential to optimize population health in the Netherlands.

The main aim of the research in this thesis is to contribute to increasing insight in the quantity and quality of the current and future public health workforce in the Netherlands, in order to support workforce planning and policy development for better population health. The public health workforce is in this thesis defined as all workers involved in prevention, promotion and protection of population health, as distinct from activities directed to medical care. We use the Netherlands as a case study to develop and test methodologies that are also internationally applicable to collect public health workforce data.

<table>
<thead>
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<th>Table 3</th>
<th>Ranking determinants of health and their contribution to the burden of disease in the Netherlands in 2011*</th>
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</thead>
<tbody>
<tr>
<td><strong>Determinants of health</strong></td>
<td><strong>% causing the disease burden</strong></td>
</tr>
<tr>
<td>1</td>
<td>Smoking</td>
</tr>
<tr>
<td>2</td>
<td>Overweight</td>
</tr>
<tr>
<td>3</td>
<td>Sedentary behavior</td>
</tr>
<tr>
<td>4</td>
<td>Excessive alcohol use</td>
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</tbody>
</table>

* RIVM, Volksgezondheid Toekomst Verkenning 2014
RESEARCH QUESTIONS OF THIS THESIS

The studies presented here address public health workforce enumeration at three levels: the current situation, strategy development to enumerate the public health workforce and future public health needs. We address the following research questions:

1. What is currently known about the public health workforce in the Netherlands?

In the first part of the thesis we aim to assess the public health workforce in the Netherlands using existing data sources and to identify potential data gaps. The research question is:

What is the quantity and quality of the Dutch public health workforce, using existing data sources? (Chapter 2)

2. How to enumerate the multidisciplinary public health workforce systematically?

We developed a strategy for empirical workforce enumeration based on EPHOs. In this part of the thesis we first define the essential public health operations for public health in the Netherlands. Subsequently we develop and test a new strategy based on EPHOs to assess the capacity of parts of the Dutch public health workforce. This part of the thesis addresses the following research questions:

a. What are the scope and essential public health operations or EPHOs of public health in the Netherlands, based on international examples? (Chapter 3)

b. What is the feasibility and validity of an EPHO based strategy to measure the size, composition and qualifications of the environmental public health workforce in the Netherlands? (Chapter 4)

c. What is the quantity and quality of the preventive youth health care (“jeugdgezondheidszorg” in Dutch) workforce in the Netherlands and can regional differences in workforce be understood in terms of indicators of preventive youth health care need? (Chapter 5)

3. How are public health priorities affected by a new conceptualization of health?

In the third part of the thesis we used the EPHOs as a framework for analysis to assess the consequences of application of a new conceptualization of health in terms of adaptation and self-management for public health policy. We used qualitative analysis of existing data from group interviews with stakeholders in Dutch public health and health care. This part addresses the following research question:

What are the implications of application of a new conceptualization of health for public health policy? (Chapter 6)

Finally, in chapter 7, the main findings of the thesis are summarized and discussed in the light of various methodological considerations and previous research. Furthermore, implications and recommendations for practice, research and policy are analysed.

OVERVIEW OF THE STUDIES PRESENTED IN THIS THESIS

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<td>Document analysis</td>
<td>Existing data and reports on the Dutch public health workforce</td>
<td>Enumeration of the Dutch public health workforce making use of existing data sources and information</td>
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<tr>
<td>3</td>
<td>Operationalisation of EPHOs for the Netherlands</td>
<td>Literature review</td>
<td>Articles and reports on public health essential operations</td>
<td>Developing a new strategy to assess the Dutch public workforce using Essential Public Health Operations</td>
</tr>
<tr>
<td>4</td>
<td>Enumeration of the Dutch environmental public health workforce</td>
<td>National cross-sectional study with online questionnaires</td>
<td>Organisations that provide Environmental public health (n=24)</td>
<td>Implementation of the new strategy to assess the public health workforce, environmental public health as example</td>
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<tr>
<td>5</td>
<td>Enumeration of the Dutch Youth health care workforce</td>
<td>National cross-sectional study with online questionnaires</td>
<td>Organisations that provide Youth public health (n=43)</td>
<td>Assessment of the national youth health care workforce and</td>
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<td>6</td>
<td>Assessing the implications of the new concept of health for public health</td>
<td>Secondary qualitative data-analysis of group-interviews</td>
<td>Group interviews (n=28), participants (n=277)</td>
<td>Assessing implications of the new concept of health for public health with regard to the EPHOs</td>
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REFERENCES


