

# Coloring the grey areas in health research on Bonaire

*Knowledge for better health on Bonaire: laying the foundations for a health research system*



Name: Sheetal Nicolaas  
Student number: 421545  
Thesis supervisor: Robert Borst  
Location: Rotterdam, the Netherlands  
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Words: 9461

**Erasmus School of  
Health Policy  
& Management**

## Abstract

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**Background:** Healthcare policies are expected to be informed by the best available scientific evidence, also known as evidence-informed health policymaking (EIHP). It is still unclear whether there is enough scientific evidence available in the Caribbean Netherlands and if this contributes to evidence-informed health policymaking. On the 10th of October 2010, Bonaire became a so-called special municipality of the Netherlands. This new structure often puts Bonaire in a rather ambiguous position: it is neither a separate country nor is it fully part of the Netherlands. A consequence of this is that Bonaire does not have the same financial opportunities to do scientific research. Even if Bonaire did have the same financial opportunities, it is still unclear how the result of this research contributes to Bonaire's policy and what type of research is still necessary. Taking into account that the European Netherlands is responsible for ensuring sufficient access to qualitative and affordable care on Bonaire, it is surprising that so little information is available. It can be concluded that the knowledge for decision making in healthcare on Bonaire and recommendations based on research are lacking. To be able to provide a solution it is necessary to understand how the health research system on Bonaire works and how this system interacts with the system of the European part of the Netherlands. By creating an overview of the different important stakeholders that play a role in health research it is intended to understand what the different responsibilities are of these actors and how they come together. The aim of this research is to map the current health research system on Bonaire and map how this system functions.

**Keywords:** Bonaire; Caribbean Netherlands; Health research system; Health research; Evidence-informed health policymaking; Knowledge translation

**Temanan:** Bonèiru; Caribe Hulandes; Sistema pa investigà salú; Investigashon di salubridat; Polítika di salubridat a base di evidensia; tradukshon di konesementu

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# 1. Introduction

## 1.1. Problem analysis

Healthcare policies are increasingly expected to be informed by the best available scientific evidence. This movement of evidence-informed health policymaking (EIHP) is getting more attention. The aim of EIHP is to boost the effectiveness, efficiency and equity of health policies (Oxman et al., 2009). The use of EIHP allows a systematic and transparent approach to and assessment of scientific evidence that can be used for the policymaking process (Oxman et al., 2009). The increasing popularity of EIHP has implications for Dutch healthcare policy as well. In the past decade, both the Dutch Research Council (NWO) and the Dutch Organization for Health Research and Development (ZonMw) have started reshaping their research funding programs to have more impact on healthcare policy. That includes the organization and funding of knowledge infrastructures.

Saliently, it is unclear whether there is enough scientific evidence available in the Caribbean Netherlands and if this contributes to evidence-informed health policymaking. On the 10th of October 2010, Bonaire ceased to be part of the Netherlands Antilles and became a so-called special municipality of the Netherlands instead. Together with the islands Saba and Sint Eustatius, Bonaire constitutes the Caribbean Netherlands (often abbreviated as BES) (Rijksoverheid, 2021).

As recently argued by Borst, Brouwer & Frans (2020), this new structure often puts Bonaire in a rather ambiguous position: it is neither a separate country nor is it fully part of the Netherlands. A consequence of this is that Bonaire did not have the same financial opportunities to do scientific research (Borst et al, 2020). For two years the Caribbean islands Aruba, Bonaire, Curacao, Saba, Sint-Maarten and Sint Eustatius have the right to apply for funding for scientific research at the Dutch Research Council (NWO), the most important Dutch science funder. This recent change still comes with some bottlenecks (personal communication, May 2021). Even if Bonaire did have the same financial opportunities, it is still unclear how the results of research contribute to Bonaire's policy and what type of research is still necessary. The few studies that have been done on the BES-islands are studies such as the evaluation research by Commissie Spies in 2015 and the Caribbean Health Study in 2017, which was initiated by the National Institute for Public Health and the Environment (RIVM) (BKZ, 2015) (RIVM, 2018). Both of these studies do not give any recommendations, which creates room for more (follow-up) research. Taking into account that the European Netherlands is responsible for ensuring sufficient access to qualitative and affordable care on Bonaire, it is surprising that so little information on the local situation is available.

On a final note, the knowledge for decision making in healthcare on Bonaire and recommendations based on research are lacking. To be able to provide a solution it is necessary to understand how the health research system on Bonaire works and how this system interacts with the system of the European part of the Netherlands. Additionally, it could also be beneficial for EIHP to know what needs to be done to facilitate the translation of research knowledge into policy. By creating an overview of the different important stakeholders that play a role in health research it is intended to understand what the different responsibilities are of these actors and how they come together. Ultimately, more and better available scientific health research will lead to evidence-informed health policymaking. This knowledge could contribute to better health and healthcare (Oxman et al., 2009).

Within this study, the focus lies on Bonaire, a remote isolated island and an overseas territory. The ambiguous position of this island and the status of a special municipality of the Netherlands makes it an interesting case. It is scientifically interesting because the organization of health research on the island presents unique challenges, while there is a great need for local knowledge about health with which policy can be subsequently informed. The insights gained about Bonaire may also be used to organize health research systems in other isolated places. Not only do the European and Caribbean parts of the Netherlands differ greatly from each other, both cultural and geographical, but the BES islands themselves differ from each other as well. The cultural and geographical differences between these islands, despite their collaborative character, is another motive to focus on one island, in this case, Bonaire. This is a starting point, which creates the possibility to improve the situation on Sint Eustatius and Saba as well and perhaps will be applicable outside of the BES-islands as well.

#### Societal relevance:

A 'healthy' research system can stimulate researchers to do more health research on Bonaire, which potentially increases evidence-informed health policymaking. Based on Oxman et al. (2009), this can ultimately affect the healthcare system positively, with better health of the population on Bonaire as a result.

#### Scientific relevance:

This study has different scientific relevancies. First, this study will create an overview of different actors and possible gaps in responsibilities. Secondly, the results of this study on Bonaire, a remote isolated island and an overseas territory, could possibly be applicable outside of Bonaire as well. Another reason why this study is scientifically relevant is because of the lack of insight on what is being done in the Caribbean Netherlands, regarding health research and which infrastructures are used for

this. This study can be seen as pioneering research, which hopes to stimulate other researchers to do follow-up research

## 1.2. Objective and research question

The aim of this research is to map the current health research system on Bonaire and map how this system functions. To do so, the following research question has been formulated: *How does the current health research system on Bonaire function and what needs to be done to stimulate the translation of research knowledge into policy?*

In order to give an answer to the research question to following sub-questions have been formulated:

1. What kind of research is done on Bonaire?
2. What type of financial support is there for health research on Bonaire?
3. Who coordinates research and who is responsible for what?
4. How does health research inform policy on Bonaire?

## 2. Theoretical framework

In this chapter, different concepts that will be used for this study will be discussed. First, the movement of evidence-informed health policymaking will be explored. Secondly, knowledge infrastructures will be mentioned. Then the concept of health research systems will be analyzed. Lastly, knowledge translation will be examined. These are all concepts that could possibly influence the healthcare system and the health of the population on Bonaire.

### 2.1. Evidence-informed health policymaking (EIHP)

Nowadays the use of research evidence when making health-related decisions is getting a lot more attention. The World Health Organization published the World Report on Knowledge for Better Health in 2004, discussing this topic (Oxman et al., 2009). Healthcare policies are increasingly expected to be informed by the best available scientific evidence, which is called evidence-informed health policymaking (EIHP). The knowledge for decision making in healthcare on Bonaire and recommendations based on research are lacking. However, what is this movement of EIHP and what are the advantages that make the use of EIHP so important?

Oxman et al. (2009) state that EIHP is an approach to policy decisions that are intended to ensure that decision making is well-informed by the best available research evidence. The aim of EIHP is to boost the effectiveness, efficiency and equity of health policies (Oxman et al., 2009). The use of EIHP allows a systematic and transparent approach to and assessment of scientific evidence that can be used for the policymaking process. By doing so, it can be ensured that research is relevant and used appropriately. Besides that, EIHP has different benefits, such as reducing political risk and enabling politicians to manage researchers (Oxman et al., 2009). Policies that are not well informed by the available evidence or do not take the limitations of the results into consideration have a higher risk for politicians. When using scientific research for policies, the path can be adjusted if the desired outcome is not reached. Lobbyists who might misuse or misinterpret scientific research can be identified earlier because critical questions about the research informing policies can be asked. Policymakers can use EIHP to show that their decisions are based on using good and relevant information and that the measured results are realistic and agreed upon in advance. This is attractive for policymakers because continuous policy improvement can be stimulated and boost their position in the research process (Oxman et al., 2009).

Due to health resources being scarce, it is important to make optimal use of the resources that are available to identify problems and achieve health goals (Oxman et al., 2009). Oxman et al. (2009) state

that by using well-informed health policies, universal and equitable access to healthcare, health-related development goals and other health goals are more likely to be achieved. In practice this does not happen often, which causes services to fail to reach the users, health indicators not being on point, countries not achieving their health goals and creating problems with the effectiveness, efficiency and equity of health systems. The lack of production and accessibility of relevant scientific research is also one of the reasons why policies are often not well-informed (Oxman et al., 2009).

To ensure EIHP, policymakers need to have access to robust evidence about different interventions and strategies that could be applied (Oxman et al., 2009). The understanding of how to connect these results with the policymaking for the complex health systems is also very important. Apart from scientific research, political, economic, cultural and social elements play a crucial role in the decision-making process (Oxman et al., 2009). Oxman et al. (2009) claim that stimulating the use of scientific knowledge and assessing its relevance and quality can help to achieve significant health gains and better use of resources. This is relevant for Bonaire because it could positively affect the healthcare system on the island, with better health of the population on Bonaire as a result.

## 2.2. Knowledge infrastructure

Infrastructure is a key pillar that supports the fundamental goal of promoting better standards of care and wellness for all patients, along with a good experience of the healthcare system (Luxon, 2015). The term 'knowledge infrastructure' is often used as an infrastructure to mediate between research, policy and practice. An example of such an infrastructure in the European Netherlands is the program "Kennisinfrastructuur Langdurige Zorg" (knowledge infrastructure for long-term care), which was initiated by the Dutch Ministry of Health, Wellbeing and Sports (VWS) (KIA, 2021). This program started in 2017, with the main goal to connect practice and policy with science. Different stakeholders in the field of education, research, policy and practice are connected to maintain and develop an efficient knowledge flow (KIA, 2021).

A knowledge infrastructure is an infrastructure that aims to connect people and motivate collaboration between different domains, fields, institutions and geographies (Karasti et al., 2016). Karasti et al. (2016) claim that bringing together different actors and organizations can create new possibilities of sharing and connecting information and resources-data, code, publications, computing power, laboratories, instruments, and major equipment. Because of this, this topic is an interesting field to explore for research funding bodies and government institutions. Analyzing knowledge infrastructures includes the analysis of the local situation. Establishing a baseline can affect knowledge-based approaches for decision-making (Karasti et al., 2016). Karasti et al. (2016) also state



that the invisibility of these infrastructures may definitively contribute to their neglect and potentially thus influence the health of the population.

Within this research, the aim of a knowledge infrastructure would be to create an overview of the research that has been done on Bonaire and the research that the citizens of Bonaire would benefit from. Even though the aim and intentions of this infrastructure are slightly different, and is in that sense a new concept, a lot of lessons can be learned from already existing knowledge infrastructures in the European part of the Netherlands. In the next paragraph, the concept of a health research system will be discussed, which can be seen as a form of knowledge infrastructure.

### 2.3. Health Research System

It is interesting to know how scientific knowledge can have a positive influence on health and health equity. Health research provides knowledge that could be used for policies, activities, and performance of health systems, and to the improvement of individuals' and populations' health, which are also the goals of a health research system (Pang et al., 2003). Pang et al. (2003) propose a framework for health research systems in which they describe four principal functions: stewardship, financing, creating and sustaining resources, and producing and using research. The concept of a health research system as explained by Pang et al. (2003) will be used to analyze how a health research system functions on Bonaire and how this could possibly be improved. Prior to formulating an answer to the research question *'How does the current health research system on Bonaire function and what needs to be done to stimulate the translation of research knowledge into policy?'* it is important to have a good understanding of what a health research system is and what its functions are.

Pang et al. (2003) argue that it is important to use available knowledge and translate this into the local context. For this study, this would be applicable for Bonaire and would mean that research has to be translated to the conditions on the island. By having a well put together health system that can access scientific knowledge, this and other health-related goals can be reached. A lot of times health research is not integrated, and different disciplines do not always come together (Pang et al., 2003). The communication between researchers and end-users (such as policymakers, health professionals and the public) is often lacking or not that effective. This interaction between the different actors in health research can be stimulated by using a framework or platform (Pang et al., 2003). In this study, this does not only mean the interaction between the different actors on Bonaire but the interaction between the actors on Bonaire and the European Netherlands as well. Pang et al. (2003) define a health research system as: *'The people, institutions, and activities whose primary purpose in relation to research is to generate high-quality knowledge that can be used to promote, restore, and/or*

*maintain the health status of populations; it should include the mechanisms adopted to encourage the utilization of research.*' This includes all the different stakeholders who are concerned with producing, synthesizing and utilizing research.

A local health research system brings together two large, complicated systems; the health system and the research system (Pang et al., 2003). By bringing these two systems together, an overview of health-related knowledge can be made. This can cause better development of health, which is also the ultimate goal for health on Bonaire. Pang et al. (2003) state that "health" research involves many different types of research including biomedical, clinical, epidemiological, health systems and policies research, socioeconomic and behavioral research contributions, as well as ongoing programme evaluations, surveillance and operational research activities embedded within health systems (Pang et al., 2003). It can be difficult to ensure the relevance of a health research system and the connections for the health system. This is because the translation from scientific knowledge to policy to practice is a process that is not straight, but rather divergent (Pang et al., 2003). The values and expectations of the public also play a crucial role in these translations (Pang et al., 2003).

In order to have oversight of the health research system, someone has to be in a supervising position, which Pang et al. (2003) describe as 'stewardship'. Most of the time this is a role that is reserved for the government. But the role of national health research councils or professional associations is also very important (Pang et al., 2003). The following components should be included according to Pang et al. (2003): definition and articulation of a vision for a national HRS; identification of appropriate health research priorities and coordination of adherence to them; setting and monitoring of ethical standards for health research and research partnerships; and monitoring and evaluation of the HRS itself. Another important factor that has to be put in place is the financing of a health research system. This could be done by setting up a solid research fund that distributes this responsibly. It is ideal that this reflects the overall vision and agreed on by scientific resources. To keep the health research system sustainable, Pang et al. (2003) argue that creating and sustaining human and physical resources for health should be an important point. The strengthening of capacity includes bringing new researchers and institutions into the system and maintaining and expanding the existing capacities to make optimal use of health research (Pang et al., 2003). Another important function of the health research system is to ensure valid research is being produced (Pang et al., 2003). The publication of resulting knowledge should come from original research and outcomes that are adapted to the local context. Pang et al. (2003) claim research can be used to develop tools to improve health and to inform health policies, strategies, and practices, particularly with health systems. Another way in which research can

be used is to educate the population and influence the opinion and practices of the public (Pang et al., 2003).

Another research that discusses the topic of local health research systems, is the article by Hasnida et al. (2016), where they describe the concept of health research systems as health systems research. During the Global Symposium on Health Systems Research in Canada in 2016, the development of health system research in low- and middle-income countries was discussed (Hasnida et al., 2016). To stimulate the development of health research, Hasnida et al. (2016) claim that funding for demand-driven and locally led research should be increased. By having locally embedded health systems research, the use of more research can be reached and will also increase the likelihood of a higher validity. Locally embedded health system research has the advantage of having a better knowledge of the specific local condition, speaking the particular language, as well as a good relationship with important stakeholders in the system (Hasnida et al., 2016). It is important to strengthen the interaction between research and society, which can be encouraged by co-investment from national governments, making sure that the research that is done is according to the national priorities and the results are translated into action. Apart from the lack of local health research, the capacity for health research systems is often underused in countries (Hasnida et al., 2016).

These concepts as described by Pang et al. (2003) and Hasnida et al. (2016) are interesting for Bonaire, because of the possible outcomes these systems stimulate. An optimal used health research system on Bonaire might have a positive influence on the two important systems, the health system and the research system, and could bring these two together. This health research system could stimulate researchers to do more health research on Bonaire, which could potentially increase evidence-informed health policymaking. The ultimate goal is to affect the healthcare system positively, which results in better health of the population on Bonaire. The concept of 'health research system' is a specific way to think about what type of infrastructures are needed in Bonaire that focuses on research on health. In the results chapter, there will be a more in-depth analysis of the health research system on Bonaire and how this interacts with the system in the European Netherlands.

#### 2.4. Knowledge translation

As mentioned by Lavis et al (2006): *'Discoveries made today are essential to the applications of tomorrow and making efforts to forge better links between discovery and application is essential to reaping the benefits of investment in discovery.'* In this paragraph, different elements to connect research with action will be discussed. There are four ways to link research with action: 'push' effort, user-pull, exchange effort and a combination of these (Lavis et al., 2006). Push efforts tend to make

potential research users aware that they should take a look at a certain message or stop ignoring it. With user pull, on the other hand, potential research users “reach out” to find information on an issue they face. For this to happen, potential users should acknowledge an information gap first. The exchange effort consists of a situation, where the two actors (the research developers and the research users) have a certain understanding and are working on a potential partnership. The fourth method combines these three approaches (Lavis et al., 2006).

To assess how countries make the connection between research and action, Lavis (2006) uses a framework that consists of four domains. One of these domains is explained above: ‘push’ effort, user-pull, exchange effort and a combination of these and how these are facilitated. The three other domains are general climate, the production of research and the efforts to facilitate user pull (Lavis et al., 2006). General climate focuses on how those who fund research perceive the importance of connecting research to action. Funders can support the connection of research to action by including this in research assessment exercises. Some funders have a mandate to support the connection between research and action (Lavis et al., 2006). The other domain, the production of research, mentions how the needs of users are taken into account and how different types of research take these needs into consideration. The last element is evaluation, which Lavis et al. (2006) describe as ‘how support is provided for rigorous evaluations of efforts to link research to action’ (Lavis et al. 2006). This framework by Lavis et al. (2006) is a concept that can be used to study the efforts of knowledge translation on Bonaire.

All concepts that are described in this chapter, are concepts that can be used to analyze the current situation on Bonaire and map the possible points of improvement.

### 3. Research Methods

This chapter presents the methodology used for this research. The chosen study design will be clarified and a description of the process of the data collection will be given. This chapter also describes the process used to recruit research participants and how the data analysis is done. Ethical considerations will be discussed, as well as the validity, reliability and generalizability.

#### 3.1. Study design

##### Research question

To be able to answer the research question *'how does the current health research system on Bonaire function and what needs to be done to stimulate the translation of research knowledge into policy?'*, three sub-questions were formulated. This research is a qualitative case study, in which literature review and interviews are important. As described by Sandberg & Alvesson (2011) this research question does not question existing assumptions but aims to fill a gap in the existing literature, also known as gap-spotting (Sandberg & Alvesson, 2011). Relatively little research is done on the Caribbean part of the Netherlands in regard to health research systems and knowledge translation, which makes this an overlooked and under-researched area. This specific type of gap-spotting is called neglect spotting (Sandberg & Alvesson, 2011). Because this research consists of a relatively new concept, the number of articles and reports on this subject are limited. To fill in this gap, this study took knowledge from key policy and care actors through interviews.

##### Qualitative case study

This study is a qualitative study as described by Mortelmans (2013). This methodology was the most appropriate choice for this research as it creates the opportunity to collect and present information from the perspective of the subjective realities and the meaning they attach to these. In order to conduct an in-depth exploration of the situation on Bonaire, a qualitative case study has been chosen as methodology. This methodology allows exploring the real-time situation on Bonaire, within its naturally occurring context (Rashid et al., 2019). It is standard for qualitative research to apply multiple research methods. One of the main methods for this study was conducting interviews with several important stakeholders within the health research system process. The interviews were semi-structured interviews for approximately 60 minutes. The semi-structured character of the interviews allowed space to mention unanticipated insights, while still making sure all the topics related to the research question are addressed (Mortelmans, 2013). A topic list was made beforehand, as a tool to make sure the interviews were structured, and everything was discussed. Another method that was

used to obtain knowledge, is a literature review and analyzing certain documents about recent or past developments on the island Bonaire. These were documents, such as government documents, letters to parliament, journal articles and other reports. These documents were publicly available and could be found on the internet. Some documents were obtained from the respondents who were interviewed. The information from the different documents has been used to compare and complete certain information. Mortelmans (2013) argues that this is one of the reasons why analyzing documents is valuable.

### 3.2. Data collection

#### Interviewing process

The process of data collection through interviews started as soon as the research proposal was approved. Interviewees were approached through snowball sampling as explained by Etikan et al. (2015), where the personal network of two key actors was used as an entry point. To be able to reach out to the interviewees, an invitation was formulated and shared through email, which provided them with some background information about the research and explained the goal of the interviews. Besides the current pandemic, some actors are settled on Bonaire, which is why the conversations took place online. People with different roles were requested for the interviews in order to gather information from different perspectives. Actors such as researchers, policymakers and healthcare workers were selected to create a broad view on the research question. An overview of the organizations the different respondents represent can be found in appendix IV. New respondents were also found by asking the interviewed people if they knew other people who would be interesting to talk to about this matter. By sharing and making their network available, new respondents could be found, and this process kept being repeated. This method of collecting and selecting respondents is also known as snowball sampling (or chain-referral-sampling), which is a non-probability sampling technique (Etikan et al., 2015). Due to the use of snowball sampling, it is important to make sure the referrals were suitable for this study. To do so the development of the sample group through respondent validation was monitored to ensure the data quality (Etikan et al., 2015). In total eleven interviews, with key actors that work at the government or in high administrative positions of their organization, have been conducted. The final sample size was determined using data saturation. As explained by Faulkner & Trotter (2017), data saturation describes a certain stage in the research process, where no new information is found in the data analysis and it can be reasonably assured that continuing data will give the same results (Faulkner & Trotter, 2017).

### 3.3. Data analysis

After the interviews were conducted, the audio recordings of the conversations were transcribed verbatim. The topic list was made in Dutch and in English, but most respondents were more comfortable with speaking Dutch. This is why at some point most of the interviews were conducted in Dutch and the transcripts are in this same language. The used findings have been translated into English. The method of verbatim transcription was applied to process the transcripts. The qualitative survey, as described by Mortelmans (2013) was used to code and analyze the information obtained in order to support the sub-questions and main questions in the answer. The obtained data is structured by elaborating the transcripts and coding openly, which means that different patterns found in the information were categorized as themes, so these could be analyzed. These relevant fragments, which are of added value for the main and sub-questions, were identified and derived from the data because this analysis is largely inductive. The highlighted fragments are mainly powerful and/or striking quotes that illustrate how the current health research system functions and what type of limitations are experienced. Then axial coding was performed, in which the open codings from the first phase were compared with each other and merged. These fragments are labelled, using the theoretical framework as a base, respectively producing and using health research, financing, stewardship and knowledge translation. Finally, selectively coded in the next phase, in which relationships were established between the codes that are grouped into themes in axial coding. The codings that are important and relevant to the research result from this. The analysis of these data is mainly exploratory and explanatory (Mortelmans, 2013). This was chosen because this research aims to provide insight into the current health research system on Bonaire on how this system functions.

#### Ethical Considerations

To ensure confidentiality and anonymity, the names of the respondents are kept confidential. Information that could potentially identify the respondents have been removed. Each interview started with reviewing the purpose of the study and explaining to the respondent what they could expect from this conversation. If there were no further questions, the respondents were told that they are free to withdraw from participation at any time during the interview and if they were not comfortable with answering certain questions, they should feel free to say so. No respondent withdrew their participation. Afterwards, informed consent was asked, explaining the purpose of the audio recordings that they are giving permission to and mentioning that this study has been approved by the ethical review board of the Erasmus University Rotterdam (EUR). The audio files and data related to the interviews will be safely stored for a period of ten years in a password-protected central location. The EUR data repository for storing data is in accordance with the Dutch code of conduct for

scientific research. The respondents participated in the interviews fully voluntarily and did not receive any financial compensation for this. It is offered, based on most of the participants' requests, that the participants could receive (a summary of) the results of the study.

### 3.4. Validity, reliability and generalizability

An instrument to ensure the quality of this study is validity (Heale & Twycross, 2015). Mortelmans (2013) explains that validity means that the formulated results are accurate. Heale & Twycross (2015) describe three types of validity: content validity, construct validity and criterion validity. Focusing on content validity, the results of this research cover the different concepts related to the research question. With these results, conclusions are drawn related to the research question. The extent to which these results cover those concepts is known as the content validity and can be assessed by checking the measurement method against the conceptual definition (Nestor & Schutt, 2019).

Another instrument to ensure the quality of the study is reliability. The reliability says something about the consistency of the results when the testing is done multiple times (Heale & Twycross, 2015). If this study would be done again, having the same group of people as respondents, you would want the results to correlate (Nestor & Schutt, 2019). Even though it makes sense for some variables to have a high correlation, some constructs are not expected to be the same over time. It can depend on different things, such as a simple thing such as mood (Nestor & Schutt, 2019). For this specific study, it might be difficult to replicate the research at a different moment in time and/or by another researcher, because of the contextual moment in time and the data collection being subjected to personal interpretation (Tracy, 2013). It is important to know the difference between a change in results because of contextual differences or wrong conduction of methods or analyses (Mortelmans, 2013).

Generalizability is also a tool that is used to test the quality of the data. Generalizability means that the results can also be applied to other populations in other situations or contexts (Tracy, 2013). Because this study is a qualitative case study and a non-probability sampling technique has been used, the generalization beyond the sample is smaller. Nevertheless, this research tends to shed a light on the situation on Bonaire and creates a starting point for the islands.

Another technique that was used to maintain the data quality is fair dealing, which means including different points of view to create a wide scope of perspectives (Mays & Pope, 2000). To preserve the quality of this study, different sources of data collection, primary and secondary, were applied. Besides the interviews, literature review and document analysis have been done to maintain the data



triangulation. Triangulation looks for similarities and differences between the results of the multiple methods of data collection that are used (Mays & Pope, 2000). This is done to stimulate the reflexivity of the study, which means the personal beliefs of the researcher are questioned to increase the credibility of the results (Mays & Pope, 2000). The data that has been retrieved through literature review and document analysis includes government documents, such as letters to parliament, journal articles and other reports. In addition, the interviews have been transcribed and the interpretations were submitted to a co-researcher, to make the research process transparent and replicable.

## 4. Results

This results chapter will be divided into four themes, based on the four principal functions Pang et al. (2003) describes as a framework for health research systems. These principal functions are stewardship, financing, creating and sustaining resources, and producing and using research. The concept of how a health research system functions as explained by Pang et al. (2003) is the base that will be used to analyze the situation on Bonaire.

### 4.1. Producing and using health research: What kind of research is done on Bonaire?

The starting point of this research was to analyze the balance between research, policy and practice. During the interviews a noticeable aspect came forward. Besides the fact that all the interviewees indicated that there is no balance between these three domains, they all shared that they experience a lack of scientific research on the island. In order to have a balance between research, policy and practice, the individual domains should be sufficient enough on their own. The question remains, if all interviewees indicate that there is a lack of scientific health research on Bonaire, what causes it?

As explained in the theoretical framework, Pang et al (2003) describes ensuring valid research being produced as one of the important functions of a health research system. The publication of resulting knowledge should come from original research and outcomes that are adapted to the local context. Pang et al. (2003) claims research can be used to develop tools to improve health and to inform health policies, strategies, and practices, particularly with health systems. Another way in which research can be used is to educate the population and influence the opinion and practices of the public (Pang et al., 2003). Based on the theory of Pang et al (2003) a lack of valid research can be seen as problematic.

During the interviews with the different actors, the amount of health research on Bonaire was one of the discussed topics. After sharing their experience in lack of scientific research on the island a more in-depth conversation could be held about the possible reasons for this. A few key points that came forward are sample size, storage of data, accessibility, consistency, capacity, setting, flexibility, coordination and funding.

Starting with sample size; Bonaire is a small island with approximately 20.000 residents. To put that in perspective, the European Netherlands has about 17.000.000 residents. Bonaire being a small island without a big population can cause research to be statistically irrelevant. This makes it less generalizable than for example in the European Netherlands, which might make doing specific research less interesting. A practical example of this is the Caribbean Health Study of 2017, which was

initiated by the National Institute for Public Health and the Environment in collaboration with the public bodies of the BES-islands and the national statistical office of the Netherlands (RIVM, 2018). A respondent with a management position at VWS shared his experience with retrieving data during that specific research. He stated the following:

*'I must honestly say, I think critically about research, and we are very reluctant to do research, because on Bonaire, but also on the other islands, the communities are small, and our experience is very often that you have very few opportunities with the research. This is because, among other things, the attendance or participation is disappointing (...) Statistically you can say that too few people have participated so you cannot draw strong conclusions. For the Caribbean Health Study there was an attendance of less than 25% and this is a study in which we have invested a lot of money in raising awareness of why you must participate. Important campaigns have taken place to invite as many people as possible to participate in the research. Unfortunately, the attendance was disappointing. That is one side, and I know from the other side what the background is that causes this. We find that 60% of the population is at or below the poverty line. So, people are not waiting for research either, because you cannot eat from that.'*

This conversation sparked interest in if neighboring island Curaçao experiences this issue as well and if so, how do they tackle it? Talking to one of the researchers of The Institute for Public Health Curaçao, the issue experienced during the Caribbean Health Study was explained, after which was asked how the experiences are on Curaçao. She mentions:

*'If we do a survey, we need at least 3,000 people. In the end, it always went well for our investigations. We had drawn a random sample based on an address file, and then went door-to-door. We had built in a number of tests to ensure that we could achieve the number of respondents. If we have to report certain estimates, we have to conduct a minimum of 3,000 surveys (95% confidence).'*

The Institute for Public Health Curaçao not experiencing the same obstacle as Bonaire might be caused by the fact that Curaçao has more citizens than Bonaire or they may have more experience on doing data collection on an island. It can be said that the Caribbean islands can learn a lot from each other's strengths and the technique on data collection used on Curaçao might be something to be studied and eventually implemented on Bonaire as well, to repair the current low participation on health studies that make use of surveys.

When research is being done, data should be correctly stored in order for links to be made for good evidence-based decision making. Talking to an epidemiologist that works for RIVM a few comments were made on the storage of data. When data is being stored it is important that these are also made

public or accessible, which is something that does not always happen in her experience. Due to fragmentation, some healthcare professionals have better data, but do not store them correctly, so they cannot be reused. Not properly storing data has a negative effect on the accessibility of research. Another important thing that this respondent mentions is 'dirty data', which she experiences as a big problem among the island because this causes data not to be usable in practice. There are different types of dirty data, such as missing data, wrong data and unusable data with subtypes for each of them (Kim et al, 2003). One of the subtypes for dirty data is outdated data, which is a form of dirty data that is also experienced on the island. There is a lack of consistency in health research, because data collection is not taking place regularly. A policy advisor from the GGD of Bonaire stated:

*'There is no standard health examination, incidentally something happens. You would still want to do continuous data collection. That is lacking.'*

The lack of proper storage of data, the accessibility of data and the consistency of research is often caused by a lack of capacity. The respondents all shared that there are not a lot of local researchers, which results in the need of external parties to help the organizations on Bonaire. Pang et al. (2003) would label this as "brain drain" of health researchers from the developing to the developed countries, which is considered to be an important issue for health research. Due to this lack of local researchers, researchers with less knowledge of the island itself have to be attracted. Attracting researchers from abroad is beneficial to ensure valid research is being produced, but also comes with obstacles as explained by a policy advisor from the GGD of Bonaire:

*'The problem is actually that researchers who come here often already have a certain design that has been designed elsewhere. In another setting it has been determined that the design of the study looks good. That is the research that will then be rolled out here [on Bonaire]. If it produces good results, you can use that for your own policy. But if you had your own researcher here who can make their own research proposals based on the needs here, you would have a very different situation. So, if you could do research, policy and practice on Bonaire itself as well, you get a much nicer mix.'*

This emphasizes the importance of setting and taking the local setting into consideration when implementing policy. Taking the local setting into consideration also means 'flexibility' according to some respondents. A respondent that works at VWS explained that sometimes action is more important, because the local citizens ask for it. This might be frowned upon from an academic point of view, where EIHP is expected. A respondent that is active in a management position in the local hospital of Bonaire, Fundashon Mariadal, shares her view on this:

*'On one hand, my academic upbringing says: give structure, bring structure, work goal-oriented, but on the other hand the islander in me says: no if you start working like this you disrupt everyone, so be flexible.'*

Two other key factors that came forward as possible reasons for the lack of health research are coordination and funding. These factors will be discussed in the following two paragraphs.

#### 4.2. Financing: What type of financial support is there for health research on Bonaire?

In the framework of Pang et al. (2003), financing is one of the four principal functions. A solid research fund that distributes this responsibly is a key factor to keep a health research system sustainable. Hasnida et al. (2016) also claim that funding is important to stimulate the development of health research.

When analyzing the research funding possibilities in the Netherlands, the Dutch Research Council (NWO) is one of the biggest and most important research institutes in the Netherlands. The NWO introduces themselves on their website as an organization that ensures quality and innovation in science. Yearly, they invest almost one billion euros in curiosity-driven research, research aimed at societal challenges and in research infrastructure. They also mention on their website that the NWO stimulates national and international collaboration. The NWO works together with the Dutch ministries to finance long-term research. Most of the time one of the ministries approaches the NWO with a certain request and together a call for a proposal will be formulated. This call explains what the purpose of the grant is, what the requirements are, who can apply and how. One of the interviews was held with a policy advisor from the NWO. There were a few particular things that stood out, that will be mentioned. The NWO views all six of the islands (Aruba, Bonaire, Curacao, Sint Maarten, Sint Eustatius and Saba) the same, which means that there is no difference between the BES-islands and the other islands. The NWO facilitates the Caribbean research program, which specifically subsidizes programs that are focused on the six islands in the Caribbean. In order for governmental bodies to set out a call, they need to approach NWO, so they can formulate a call together. The governmental body that sets out a call, for example the Ministry of Health, Wellbeing and Sports, makes a budget available for the research. Most of the time this budget gets doubled by the NWO itself, if they have the capacity to do so. The organizations that fund the research have the most authority over the research. Most of the time these are the ministries. The Dutch ministries in the European part of the Netherlands also have the responsibility for the Caribbean part of the Netherlands. The policy advisor of NWO states:

*“... research is also a luxury product. There are, of course, other things that have priorities. They [the Caribbean islands] can also contact us and the programs via [European] Dutch ministries. But the regular programs of NWO are regularly funded by the Ministry of Education, Culture and Science and you can simply submit that, but that is very competitive.”*

This means that if Public Body Bonaire (OLB) would like to set out a call, they would have to contact a ministry, for example VWS, who has more financial means, so they can discuss a budget and then request an application at NWO. This is an extra step for OLB to set out a request for research. Another difference is that it has only been two years since the Caribbean islands are allowed to set out a request at the NWO, which is short in comparison with the European Netherlands. Because Bonaire is relatively new to this procedure, there is less experience on how to reply on a call or how to set out a call. The Dutch universities have a lot more experience in supporting their researchers to apply for a fund and have invested in supporting the researchers during this process. A researcher is dependent on a university for this application. It is also one of the requirements of NWO that the application goes through a university. This itself is another limitation for Bonaire, since the island has no universities. This means that in order for a researcher from Bonaire to qualify for a call, they need to collaborate with a university abroad. This could be a Dutch university or a university from one of the other islands. All the extra steps and the lack of experience makes it a lot more difficult for researchers as well as OLB to reply to or set out a call.

Another organization that is responsible for research is the Ministry of Education, Culture and Science (OCW). The difference with OCW is that they are not responsible for thematic research on a specific topic. Their focus lies on systems and making sure researchers are able to do their work. Just like the NWO, the OCW includes all six of the islands previously mentioned and does not focus on the islands individually. In response to this a policy officer of OCW states:

*“You are not going to build your own system for the small islands, they are too small to do that. But then you ask the question: how they can participate in everything that is happening (...).”*

OCW also discusses the prevention of fragmentation but emphasizes on the importance of taking the local context and situation into consideration when looking into certain cases.

Medical research is a domain that gets funded by another organization: The Dutch Organization for Health Research and Development (ZonMw). Based on their introduction on the website, ZonMw finances health research, stimulates the use of research and notices where more knowledge is needed (ZonMw, 2021). Unfortunately, they were not available to participate in this research. On the website information can be found about past research on overweight/ obesity amongst the youth on Bonaire. On the 28<sup>th</sup> of July 2021 a call for funding for action research for dementia care in the Caribbean part of the Kingdom of the Netherlands was posted. This file can be found on the ZonMw website in which they explain that ZonMw has been working on research on dementia for years. In this new dementia

research program, not only the European part of the Netherlands is included but the whole Kingdom of the Netherlands. With this, the inclusion of Saba, Sint Eustatius, Sint Maarten, Aruba, Bonaire and Curaçao are meant. With this subsidy call, ZonMw intends to improve the quality of dementia care on these islands. ZonMw (2021) states the following: 'In order to strengthen the local organization and infrastructure of dementia care, this call for subsidies focuses on collaboration between the Saba, Sint Eustatius, Sint Maarten and Aruba, Bonaire, Curacao.' ZonMw puts the focus on the collaborations between the islands and connection with a current local initiative (for example the Bonaire National Dementia Policy Plan). They also want the research to have a social impact that has added value for dementia care on all six islands. This could explain why the ZonMw wants the subsidy to be applied to action research, which involves both research and implementation (ZonMw, 2021). Another important requirement is that the main applicant is a local party from the BES islands (ZonMw, 2021).

What all the different research institutes have in common, is that they are all located in the European Netherlands and not on Bonaire itself. ZonMw is an exemption by requiring a local party from the BES islands to be the main applicant for subsidy for local research. Unfortunately, it is often still unclear which organizations have certain responsibilities towards Bonaire. There is a lot of room for improvement on this matter and clarification on processes.

#### 4.3. Stewardship: Who coordinates research and who is responsible for what?

As stated in the previous paragraph there is still a lot of uncertainty on the evaluation and monitoring of the production and use of health research and the resulting knowledge. A possible solution could be found in the proposed Dutch Caribbean Research Platform (DUCARP). A report on the sustainable strengthening of the knowledge system in the Caribbean part of the Kingdom in the Netherlands has been commissioned by the NWO Caribbean Research Program Committee, funded by OCW. This study shows that a lot of interviewees are concerned about the fragmentation of the current knowledge system. The researchers also state that just funding is not enough, but the investment should be in a knowledge system. The recommendation based on the results of this study is to start a network organization on Sint Maarten, with 'anchor points' on the other islands. The goal of DUCARP would be to strengthen the quality and the quantity of scientific research on and about the Caribbean islands.

Most of the concerns mentioned in the report on the sustainable strengthening of the knowledge system in the Caribbean part of the Kingdom in the Netherlands match with the different interviews held for this study. Creating a platform that ensures continuity of scientific research on and about the Caribbean Island could boost health research on Bonaire. A footnote is that this study focuses on

Bonaire, while most organizations focus on all six of the islands together. The advantages and disadvantages of bringing these islands together is still unclear.

#### 4.4. Knowledge translation: How does health research inform policy on Bonaire?

For this paragraph a further look on how health research is informing policy on Bonaire is discussed. Pang et al. (2003) argue that it is important to use available knowledge and translate this into the local context. They describe the process of translating scientific knowledge to policy to practice as a process that is not straight, but rather divergent. The values and expectations of the public also play a crucial role in these translations (Pang et al., 2003).

In order for health research to inform policy, it is important that enough research is done. Researchers can also share their knowledge by giving lectures on the island or organizing an information meeting. Even training in the hospital would be a way to create a bigger impact. Investing in a proper digital infrastructure to store data and make research public is a way of making research more accessible, which creates the opportunity for policy makers to use the results of research. If the data that is available is large and comprehensive enough to define policy, it is important that policymakers also understand the language of the researchers so they can make this translation.



## 5. Conclusion and discussion

### 5.1. Conclusion and recommendations

This thesis sets out to study how the current health research system on Bonaire functions and what needs to be done to stimulate the translation of research knowledge into policy. The analysis shows that there are important aspects to consider. First of all, the lack of health research translates into a lack of knowledge translation, which causes policy on Bonaire to be less evidence-informed based. This lack of health research is an effect of several aspects, such as difficult access to funding and not having proper coordination. In order to improve the current health research system on Bonaire, consistency and clear communication between the different actors is important. Often it is still unclear where certain responsibilities lie, which prolongs a lot of processes in the health research systems.

To increase health research and the translation of research knowledge into policy, it is important to start with the responsibilities. Which actors are responsible for what tasks and what are different communication lines? How do the different actors mandate and delegate the roles in such a way that everyone takes responsibility and at the same time creates a coherence between the different roles in the entire process of health research and knowledge translation. With these responsibilities the financial aspects, such as funding, should not be overlooked. When this is put in place a blueprint can be made to give an overview of how the system works regarding health research and policy. Within this blueprint it is crucial that there is a consensus between the different actors that are involved in this process. It should also be known what the available budget is, and how this should be invested and regulated, to achieve these formulated goals. This blueprint needs to be evaluated and (if necessary) improved consistently. An evaluation would be recommended at least every four years, taking the elections into consideration, which could lead to government change. Policymaking is very much influenced by politics, and with government change policy could go in different directions. Another important aspect is the implementation of the points previously mentioned. How will the policies be managed, efficiently and effectively rolled out and made measurable? This information can be of use during the periodical evaluation. It is relevant to know what type of behavior and leadership is needed and desired to work on these formulated common goals. It would be valuable if the actors involved are made aware what kind of responsibilities they have and which role they play in the process. A continuously dynamic learning culture would be advised in order to develop the attitude amongst the different actors.

## 5.2. Discussion and limitations

This research is focused on the health research system on Bonaire. Despite this focus on Bonaire, the results might also be applicable on St. Eustatius and Saba. In general, it could be concluded that the results of this study might be less generalizable. Further research could be done on how the results of this study could apply to the other islands. At last, future study could be done on the recommendations of the Week of Caribbean Research in June 2021. During this week, the report by Wiebe Bijker and Jorien Wuite about the sustainable strengthening of the knowledge system in the Caribbean part of the Kingdom of the Netherlands was published. Within this report six recommendations towards OCW and NWO were made. Since this report was published quite recently, a more in-depth, follow-up study could be done on how these recommendations are received and if they are being applied.

When looking at the limitations of this study, the used research method comes with certain limitations, such as the sampling technique of snowball sampling. With this technique it is more difficult to be inclusive, since it is most likely that the research stays within a certain network. Lastly, biases such as sampling bias, personal bias and intellectual bias, should also be taken into account. When taking a further look at personal bias, the outsider perspective could play a role in how certain data is researched and interpreted. An outsider might be less aware of the local context and practices but could also bring a more nuanced perspective. Within this research, a lot of focus lies on scientific knowledge, which is seen as an important aspect of policymaking in the Western world. On a remote, isolated island such as Bonaire, this perspective on scientific knowledge might not be weighted as heavily as in the European part of the Netherlands.

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## 7. Appendix II: List of abbreviations

BES	Bonaire, Sint Eustatius and Saba
BKZ	Ministry of Internal Affairs and Kingdom Relations
CBHRI	Curacao Biomedical and Health Research Institute
CBS	National statistical office, Statistics Netherlands
CNSI	The Caribbean Netherlands Science Institute
DUCARP	Dutch Caribbean Research Platform
EIHP	Evidence-informed health policymaking
IGJ	The Health and Youth Care Inspectorate
NWO	Dutch Research Council
NZA	Dutch Healthcare Authority
OCW	Ministry of Education, Culture and Science
OLB	Public Body Bonaire
RCN	National office for the Caribbean Netherlands
RIVM	National Institute for Public Health and the Environment
SCP	The Netherlands Institute for Social Research
VIC	The Institute for Public Health Curacao
VWS	Ministry of Health, Wellbeing and Sports
WolBES	Act of Public Bodies Bonaire, Sint Eustatius and Saba
ZJCN	Health and Youth Caribbean Netherlands
ZonMw	The Dutch Organisation for Health Research and Development

## 8. Appendix III: Topic List

### Introduction

- Introduction researcher
- Introduction of the planned research process, topic and objectives
- Asking permission for recording and explaining what happens with the data

### General questions

- Do you feel that enough research on health is done on Bonaire?
- What type of research are you missing?
- Do you feel that the results of research are being implemented in daily practices?
- How do you think the results of research can be implemented in policymaking?
- Do you feel there is enough balance between research, policy and practice?
- Do you think these three parties collaborate enough?
- How do you think these three parties could work together better?
- Who do you think are important parties within these three fields?

### Questions researchers

- Who are important scientific actors?
- What do you need to do as a scientist to start research on Bonaire?
- How does it work to receive financing for research?
- Which actors do you reach out to if you want your results to be implemented?
- Do you feel there is a gap in health research on Bonaire?
- Do you think there is a discrepancy between research and practice?
- What can be done to bring research, policy and practice together?

### Questions healthcare workers

- Who are important actors in the healthcare field?

- Do you feel there is enough research done that the healthcare on Bonaire can benefit from?
- How would it work if you would like particular research to be done?
- What type of research would you like to see?
- Which actors would you reach out to if you want to see a change in policymaking?
- Do you feel there is a gap in health research on Bonaire?
- Do you think there is a discrepancy between research and practice?
- What can be done to bring research, policy and practice together?

#### Questions policymakers

- Who are important policy actors in the healthcare field?
- Do you feel there is enough research done that the healthcare on Bonaire can benefit from?
- What does a researcher need to do to start research on Bonaire and receive financing for this?
- Do you feel there is a gap in health research on Bonaire?
- What type of research would you like to see?
- How would it work if you would like particular research to be done?
- Which actors would you reach out to if you want something to be researched?
- Which actors would you reach out to if you want input from daily practice?
- Do you think there is a discrepancy between research and practice?
- How would you implement the results of research in practice?
- Which actors are involved in this process?
- What can be done to bring research, policy and practice together?

#### Outro

- Is there another important matter that you feel I have overlooked in this conversation?
- Is there anything else that you would like to share with me?
- Thanking the respondent for their time and input

## 9. Appendix IV: Overview organizations respondents

Council of State

Dutch Research Council

Fundashon Mariadal

GGD Bonaire

Hospital San Francisco

Ministry of Education, Culture and Science

Ministry of Health, Wellbeing and Sports

National Institute for Public Health and the Environment

The Institute for Public Health Curacao