



MINISTRY OF HEALTH  
REPUBLIC OF MALDIVES

# **MALDIVES HEALTH RESEARCH BULLETIN**

**VOLUME VII**

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## FOREWARD

The Maldives Health Research Bulletin is published annually by the Ministry of Health with the aim of promoting health research in Maldives. The main objectives of publishing a health research bulletin include (1) to create a common platform for students, researchers and other stakeholders to gain easy access to health research materials relevant to Maldivian context, (2) to provide technical support to students and researchers by providing information related to existing and ongoing research as well as by highlighting the health research priority areas and (3) to ensure that research is conducted in line with national health research priority areas in accordance with legislation of Maldives and the standards of World Health Organization.

The seventh volume of the Maldives Health Research Bulletin consists of twelve abstracts of completed research, information on ongoing research as well as an overview of the function and procedure of the National Health Research Council. It is anticipated that the health research bulletin will provide critical information and guidance for policy formulation and strengthening of health programs and interventions.

The Ministry of Health would also like to acknowledge the contributions of the Maldives Health Research Bulletin development team of the Health Information and Research Section of Policy Planning and International Health Division at the Ministry. Additionally, the Ministry of Health acknowledges and highly appreciates the efforts of health researchers, including contributors of this bulletin. It is hoped that the research conducted in this area would contribute to the improvement of health services and development of the health sector of Maldives.

Ahmed Naseem  
Minister of Health

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Policy Planning and International Health (PIH) Division  
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Republic of Maldives  
Tel: +960 3328887  
Fax: +960 3328889  
Email: [ppd@health.gov.mv](mailto:ppd@health.gov.mv)  
Website: [www.health.gov.mv](http://www.health.gov.mv)
- Data Compilation:** Neena Mohamed (Planning Officer, PIH, MoH)
- Data Verification:** Aminath Shaina Abdullah (Deputy Director General, PIH, MoH)  
Moomina Abdullah (Director, PIH, MoH)  
Sofoora Kawsar Usman (Assistant Director, PIH, MoH)  
Fathimath Shamah (Senior Research Officer, PIH, MoH)
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## Effectiveness of ‘Tiny Hearts’ programmes in addressing Congenital Heart Diseases in Maldives

**Author: Dr. Sheena Moosa**

**Research duration: 1 June 2019 - 30 November 2019**

### Objectives

The purpose of this study is to assess the effectiveness of programmes conducted by Tiny Heart Maldives (THM) targeting Congenital Heart Diseases (CHD) in Maldives.

### Research question

1. What are the medical outcomes of the Care for Tiny Hearts Programme conducted by THM?
2. What are the perceptions of the beneficiaries and stakeholders on the programmes of THM?

### Rationale and Justification

Congenital Heart Disease (CHD) accounts for about 30 per cent of birth defects across the globe (Christianson, Howson, & Modell, 2005) and affects similar proportion of newborns in the Maldives (Ministry of Health 2018). This research is inspired by the work of Tiny Hearts Maldives (THM), a non-governmental non-profit organisation that endeavors to fill the gap in providing information and support access to treatment for Maldivian parents on children’s heart health issues, with particular emphasis on CHD.

### Methodology

A quantitative analysis of the cohort of 550 patients registered at Tiny Heart Maldives over the period 2008-2018 was used for a retrospective analysis of selected parameters that affect the management and care of children with CHD. International Classification of Diseases version 10 (ICD-10) was used to categorize the CHDs for the purpose of the analysis of descriptive statistics. In addition, qualitative analysis of beneficiary and stakeholder interviews were conducted to understand their experiences and perspectives of the THM programmes.

### Results/Findings

The beneficiaries had ‘very good’ experience with the services of THM. They were able to share the situation

for their children with family and friends without stigma and majority reported that their children have opportunities to participate in school activities. Areas of further support identified by the beneficiaries include caring and nutrition advice and accessing information that is condition specific to the particular CHD, information about danger signs and home based care and facilitating cardiologist appointments. Stakeholders noted the need for outreach camps to the atolls, joint planning, and improving coordination. Furthermore, the need for maintaining THM’s strategic focus on children was stressed while THM expands its new initiatives such as ‘Healthy Heart’.

### Implications

The ‘Care for Tiny Hearts’ programme with its focus on community based camps for screening of children for CHD, in collaboration with local and international specialists and hospitals, is successful by providing opportunities for early detection and access to treatment. In order to maintain success, THM needs to strengthen their partnership with local health care providers and financing schemes and expand reach to the Atolls.

### Conclusion

The characteristics of this programme has the potential to be replicated in other resource-limited settings to improve child survival. Early detection and timely intervention of CHDs will be an important contribution towards the goal 3.2 of the Sustainable Development Goals.

### Research report available from:

Tiny Hearts Maldives

# Does Social Support explain the psychosocial wellbeing of family members of SUD persons in the Maldivian population? – A Qualitative Study

**Author: Azra Abdul Sattar**

**Research duration: March 2019 - September 2019**

## Objectives

The aim of the study was to understand the challenges that the families go through due to having a Substance Use Disorder (SUD) person in the family. In particular, if the presence or absence of informal social support (from society and close persons) serves to influence coping. Additionally, we will explore the importance of developing a formal support system (government or NGO) for families of SUD persons.

## Research question

1. Are there strains on the family members who take on the role of guardian or care-giver due to providing care for Substance Use Disorder (SUD) person?
2. Do the family members receive social support in the form of formal support from organizations (government and NGO)?
3. Do the family members receive social support in the form of informal social support (from other family members, relatives, community and friends)?

## Rationale and Justification

The aims of this research are to explore the issues and burdens Concerned Family Member (CFM) of SUD persons may face due to the possible absence of formal and informal support from the society. The research is based on the population of Maldives; a community of people who have close-knit family ties and shares a homogeneity across the country with regard to their religion, culture, language and traditions. It is notable that research on this specific population (families of SUD people in Maldives) is non-existent despite the prevalence of SUD and substance use problem behavior. In addition, the field of addictions research would benefit from the knowledge of the limitations and complexities a Small Island Developing State (SIDS) face in provision of assistance and intervention for SUD.

## Methodology

All data were collected using qualitative method (interviewing), one-on-one with participants.

In order to explore the lived experiences of families of SUD persons, interviews were conducted with the CFM. Recruitment of participants was facilitated by the National Drug Agency (NDA). The participants were the registered caregiver at the agency. To practice consistency of experiences with SUD person and the participants, a condition for purposive sampling was that the SUD person and the family member share (or shared) the same household. The participants were a parent, spouse, adult children, siblings or a relative. To understand the view of service providers in the field of drug prevention and treatment, two professionals were interviewed (two officials of authority, one from NDA and one from Journey). These participants were able to shed light based on their expertise in the field to the current services and assistance provided to the family members of SUD persons and improvements or changes they see were necessary in order to assist the family members. They were also inquired on the importance of the family's role in the treatment of SUD persons.

The interview schedule was developed based on literature and the requirements for the study.

The interview schedule was based on phenomenological semi-structured interview basis. This allows focus and control to directing the interview to cover all important objectives of the study. All interviews were transcribed and analysed manually utilising thematic analysis as described by Braun and Clark (2006).

## Results/Findings

The first question explores the possibility of strains on the CFM in provision of care for their relative, the CFMs were observed to endure several obstacles and distress in their attempts to assist their relative. Additional questions asked from the CFM to investigate on the availability of formal and informal social support demonstrated that the CFM do receive informal social support from a close person however they also face a lot of difficulties due to other members in the community. Formal social support was observed to be insufficient. The lack of formal support as well as the hardship due to the community, the informal

social support the CFM receive from a close person alone seems to be insufficient in lifting the strains they endure.

### Implications

The research suggests that due to the insufficient formal support as well as the scrutiny the CFM face from members of the community, their wellbeing is markedly strained. Formal support needs to be increased, including emergency hotlines, drop-in centers and regular family counseling sessions. This is of utmost im-

portance as the family members play a major role in the recovery of SUD persons; the wellbeing and awareness of CFM will contribute to a smooth recovery and transition back into the society of the SUD relative.

### Conclusion

Currently, data on this topic is absent for the Maldivian population, therefore, this research is expected to assist in understanding the complaints and obstacles the CFM undergo.

## Quality of Work Life among Nurses at Indira Gandhi Memorial Hospital in the Maldives: A Cross-Sectional study

**Author: Aishath Hudha**

**Research duration: 3 months**

### Objectives

The aims and objectives of the study were to assess the Quality of Work Life (QWL) of nurses and to identify factors among nurses working at a tertiary care hospital in the Maldives.

### Research question

1. What is the Quality of Work Life of nurses working at a tertiary care hospital in the Maldives?
2. What are the factors which impact Quality of Work Life among nurses in Indira Gandhi Memorial Hospital of the Maldives?

### Rationale and Justification

This study identified the factors which impact Quality of Work Life of nurses in Indira Gandhi Memorial Hospital. (IGMH).

It was found out that the QWL was different in different specialty groups. (different wards were categorized into specialized groups). Finding the most significant factors which contribute Quality of Nurse Work Life can offer vital information for the hospital management and policy makers. Thus, they should be able to design managerial programs that enhance retention and efficiency in the hospital.

Shortage of nurses is a public health concern. According to research, shortage of employment was found to be a significant predictor of employment dissatisfaction and exhaustion. Thus, QWL is believed to be one of the important features in recruitment and retaining the employees in an organization.

### Methodology

Deductive approach and a cross-sectional quantitative research paradigm were applied for this study.

A stratified, random sample was used in the study. The target population was registered staff nurses who has been working for more than one year in IGMH and doing rotating shift duties.

### Results/Findings

The study showed that the nurses working at IGMH had moderate QWL.

It showed that the QWL was different in different specialty groups. Group 2, Group 3 had high QWL where else Group 1, Group 4 and Group 5 had moderate QWL.

### Implications

Majority of the nurses agreed it was important for a hospital to offer employees on-site childcare services and onsite ill childcare services, as they perform many non-nursing tasks and experience many interruptions in their daily work routine. This study may be able to make a positive contribution to retain and sustain the nursing workforce in the hospital.

### Conclusion

This research may deliver an insight for health leaders and managers on fixing the problem areas to promote a healthier work life for nurses in the country.

# Parental stress and Associated Factors in Autism Spectrum Disorder: A Comparative Study among Mothers in India and the Maldives

**Author: Fathimath Ashan & Dr. Mareena Susan Wesley (Supervisor)**

**Research duration: January 2019 - October 2019**

## Objectives

1. To identify stress among parents of children diagnosed with Autism Spectrum Disorder (ASD) in Maldives in comparison with parents of children diagnosed with ASD in India
2. To explore factors such as diagnosis severity, parenting styles and duration of diagnosis as contributing factors for this stress in these two cultures.

## Rationale and Justification

Parents of children diagnosed with ASD experience higher levels of stress compared to parents of typically developing children. This stress affects the caretaking routine of the child, affecting the overall well-being of the child. With the high prevalence of this disorder among South Asian countries (1 in 93 children), it is important to identify this stress level among parents, and to identify factors associated with this stress. This will aid in developing strategies or interventions for parents with regard to managing their stress at an early stage. The findings will also provide indications for medical professionals and clinical psychologists to provide professional support and psychoeducation for parents when giving a diagnosis for ASD.

## Methodology

The participants were 49 mothers, 23 from India and 26 from Maldives, with children diagnosed with Autism Spectrum Disorder. These parents were selected based on purposive sampling method. The design of study was a quantitative factorial design (3 X 3 X 2).

## Results/Findings

The results indicated increased levels of stress among mothers and this stress level was higher for mothers in India. There was also an increase in means for stress with diagnosis severity. However, no significant difference was found for parenting styles. Significantly greater stress was found for longer duration of diagnosis (more than 2 years) compared to relatively recent diagnosis duration (less than 2 years). Moreover, there was a significant difference between the types of parenting styles opted by each country.

## Implications

There are important implications of these results. First, it is important for the parents to become aware of this increased levels of stress and factors associated with this stress and start personal therapy to curb and reduce the stress. Second, the findings will aid the clinicians in conveying prognosis of future outcome, based on the factors identified as contributing to stress. This study also encourages researchers to continue investigating other strong factors such as social support, family living condition and type of intervention which might affect this stress.

## Conclusion

The findings of this study will help parents of children diagnosed with this stress to be more aware of this stress and identify factors associated with this stress. Hence, it will help them to manage it well and adapt to the situations successfully. This adaptation in parents will result in effective involvement of the parent in the child's treatment process, hence leading to better enhancement of the treatment process and a better prognosis. Additionally, as the findings aid professionals (psychiatrists and clinical psychologists) in conveying a prognosis of future outcome, it results in a more collaborative effort and develops more trust towards the clinicians.



## Knowledge of stroke among Maldivian adults

**Author:** Hamdhoona Abdulla

**Research duration:** January 2018 - March 2019

### Objectives

The purpose of the study is to identify (a) the knowledge of stroke; risk factors, warning signs and importance of timely presentation to hospital (b) compare the level of stroke knowledge with age and gender (c) the relationship between knowledge of stroke and level of education among the adults in Male' city.

### Research questions

1. What is the level of stroke knowledge (risk factors, signs and symptoms and timely presentation to the hospital) among adults in Male' city?
2. Is there any difference between the level of stroke knowledge with age and gender of adults in Male' city?
3. Is there any significant relationship between knowledge of stroke and level of education among adults in Male' city?

### Rationale and justification

According to the statistics of the Health Protection Agency, in the year 2012, stroke is included in 20 leading causes of death in the Maldives. Besides, it is also ranked as the third leading cause of death in Maldives (Health Protection Agency, 2014). Due to the high burden of non-communicable diseases (NCDs) on national economies and health systems, global actions to control NCDs are declared in September 2011 (Multi-sectoral Action Plan, 2014). These facts indicate the need for health awareness and early detection and prevention of stroke in the Maldives. Scientific evidence confirms that many lives can be saved through prevention and early detection. Through lifestyle modification and screening programs, 80% of stroke is preventable (WHO, 2014).

Although cerebrovascular accident (CVA) is a leading cause of death in the Maldives, limited studies are available to identify the baseline knowledge of stroke warning symptoms, risk factors, and treatment options for the adults in the community of Male'. Lack of awareness of stroke could delay the prompt arrival to hospital emergency department for immediate effective treatment (Brown et al., 2012). The longer time to reach the hospital the greater number of brain cell death will occur (Brown et al., 2012). Therefore, it is

essential to increase awareness among the general population for preventive measures and medical treatment. It is a public health priority to increase the knowledge of stroke. Moreover, the study can focus to assist in developing educational programs for the public to improve the prevention and early treatment of stroke.

### Methodology

This study is a quantitative descriptive, cross-sectional research. The study sample is 270 adults between 20 to 39 years of age. A structured questionnaire was used to measure stroke knowledge and collected stroke awareness data from two areas of Male' city.

### Results/Findings

The total of 161 (59.6%) female participants and 109 (40.4%) males, aged 20 to 39 (M= 28) participated in the study. The overall stroke knowledge score is below average, 65.6% (N=177) participants indicating that adults in Male' city are not aware of stroke knowledge (signs and symptoms, risk factors and timely presentation to a health care facility). However, there was a significant relationship between stroke knowledge and level of education among adults. The one way ANOVA test shows that there is significant relationship between the level of stroke knowledge with the level of education at  $p < 0.05$  level for the conditions ( $F(2, 267) = 3.191, p = 0.043$ ). Thus the result suggested that there is an association between the level of stroke knowledge and level of education.

### Implications

The findings of the study can be used for developing future stroke awareness programs. Study confirms that existing educational programs need to be evaluated and refined to address the identified areas in the study. This study also identified baseline knowledge about stroke among the adults in Male' city, Maldives.

## Conclusion

The study identified level of stroke knowledge among the adults in Male', Maldives. The findings of the study will assist for developing future stroke awareness programs for the public to improve the prevention and early treatment of stroke. An education model needs to be developed to educate the public to increase awareness of stroke risk factors, signs and symptoms of stroke.

## Knowledge, attitude and practices among local nurses towards primary prevention and early detection of breast cancer in selected hospitals of Greater Male' of the Maldives; A quantitative descriptive study

**Author: Afsana Fahumee**

**Research duration: January 2018 - November 2018**

### Objectives

The objective of the study was to assess the knowledge, attitude and practice on primary prevention and early detection of breast cancer among local nurses working at the hospitals in Greater Male' of the Maldives and to compare the knowledge, attitude, practice (KAP) on primary prevention and early detection of breast cancer between different designations among local nurses working at the hospitals in Greater Male' of the Maldives .

### Rationale and Justification

The aim of the study was to find out the knowledge, attitude and practice on primary prevention and early detection of breast cancer among local nurses working at hospitals in Greater Male' of the Maldives.

### Methodology

This was a non-experimental study and a quantitative descriptive design was used . Data was collected by using a structured questionnaire which is designed to achieve the study objectives. Population: local nurses working at hospitals in Greater Male', of the Maldives. Sampling: The total of target population was 512 subjects. Sample size is calculated using Raosoft sample calculator, 2004 with 5% of margin of error and 90% of confidence interval. The data was analyzed by using the software SPSS version 23

### Results/Findings

The results of this study showed that 24.8% of the population had low level of knowledge, 48.6% had medium level of knowledge and 26.7% had high level of knowledge. Therefore, the study population had

Although, further studies based on population are needed to identify the level of stroke knowledge among adults and other groups of people. Future research also can focus on identifying the need to estimate own risk of stroke among the Maldivian adults.

adequate level of knowledge about breast cancer. The study also revealed that they had positive attitude towards primary preventive and early detection measures of breast cancer and they are habituated with primary preventive practices. However, there are crucial points to be highlighted in the findings including the fact that half of the nurses (105) marked use of contraceptives as not a risk factor of breast cancer even though their overall knowledge level is adequate.

### Implications

This study helped to find the most needed area of education for prevention and early detection of breast cancer among local nurses in Greater Male'. With regard to the responsibilities of the nurses, it is important to have ongoing education and support for nurses, and these lies as organizational responsibilities. Nurses should be equipped to develop ongoing educational practices for health promotion as a priority to maintain contextualized professional policies for practices. Recommendation for future is to conduct studies on KAP among nurses in different areas of the Maldives to bring a report that could be generalized to the local nurses working in the whole Maldives and also to conduct similar type of studies for the general public to bring a generalized result of the whole Maldives population on primary prevention and early detection of breast cancer.

### Conclusion

This study helped to find the most needed area of education for prevention and early detection of breast cancer among the study population.

# Knowledge of cervical cancer, attitude, and practice towards screening among nurses in a tertiary hospital, Male', Maldives: A Quantitative study

**Author: Aminath Asra**

**Research duration: April 2017 - March 2019**

## Objectives

The study intended to assess the level of knowledge of cervical cancer, attitude and practice (KAP) towards cervical cancer and its screening among nurses working in Male, Republic of Maldives.

## Research questions

1. What is the knowledge level of cervical cancer and screening among nurses working in IGM hospital?
2. What is the attitude of nurses working in IGM hospital towards cervical cancer and screening?
3. To evaluate the practices of cervical cancer screening among nurses working in IGM hospital
4. To identify the variance between the knowledge level of cervical cancer among nurses working in IGM hospital and across their practice of cervical cancer screening
5. Is there any difference between the attitude towards cervical cancer and screening across the knowledge level of cervical cancer and screening among nurses working in IGM hospital?

## Rationale and Justification

Nurses are the most visible front line personnel in a health care team, and they are the largest group among health professional who play crucial role as an educator as well as supporters to the general population in addition to the care they provide to the patients. The crucial first step for providing better health education is to attain accurate knowledge. Therefore, it is public health importance for them to have current and accurate knowledge about cervical cancer, as they play a vital role in education and promoting preventive measures among the general population. However, limited studies are available to assess the level of knowledge about cervical cancer among nurses working in any area of Maldives.

## Methodology

A cross-sectional study conducted in IGM Hospital (IGMH); one of two tertiary hospitals in Male, Republic of Maldives. Before conducting the study, verbal and written consent was obtained. A total of 209 nurses participated in the study. The self-administered ques-

tionnaire used consists of open-ended questions to assess nurses knowledge of cervical cancer and screening, a Likert scale to identify the attitude of nurses towards cervical cancer and screening, and practice of cervical cancer screening. Data cleaned and analyzed by SPSS version 20 for windows.

## Results/Findings

The results revealed that majority 150 (71.8%) of the nurses have satisfactory knowledge, 30 (14.4%) had adequate knowledge and 25 (13.7%) had poor knowledge. Moreover, 183 (88.5%) respondents had a positive attitude towards susceptibility of getting cervical cancer, 145 (69.4%) had a positive attitude towards severity of cervical cancer, 202 (96.7%) had a positive attitude towards benefits of getting screened for cervical cancer, and 182(87.1%) had negative attitude towards the barriers of getting screened for cervical cancer. Furthermore, only 20 (10.9%) respondents have ever been screened for cervical cancer. The study has revealed that there is a significant difference between the attitude of nurses towards cervical cancer and screening across the knowledge among nurses.

## Implications

Consistent in-service training programs are needed for nurses to keep them up-to-date with the knowledge about cervical cancer and screening for their self-care and to maintain their integrity of providing accurate and adequate information to the general population. Organizing special screening program within the institute for health care personnel/ nurses will improve the uptake of screening among nurses making them role models for other women to change their behavior and attitude towards the practice of screening for cervical cancer.

### Conclusion

The study has revealed adequate knowledge and a positive attitude toward cervical cancer and screening but despondently poor uptake of cervical cancer screening among nurses. The result of the study emphasizes the need of consistent in-service training among nurses enabling them to keep up-to-date with cervical cancer and screening for their self-care as well as them to provide adequate and accurate information to the general population which ultimately will increase the uptake of cervical cancer screening among women in the Maldives.

### Research report available from:

<https://drive.google.com/file/d/1JVKcjZPUucGCJ0JijY4MoHUT0Oo5yGON/view?usp=drivesdk>

## Knowledge of Cardiovascular Disease, Attitude and Practice towards its prevention among Villa College students in Male' Maldives

**Author: Hafsa Reena Mohamed**

**Research duration: August 2018 - March 2019**

### Objectives

The overall purpose of this thesis is to understand cardiovascular health issues from a population perspective, especially in terms of perceptions about cardiovascular risk factors, cardiovascular disease (CVD) manifestation, and preventability.

1. To examine the level of CVD knowledge among students of Villa College.
2. To identify the attitude towards prevention of CVD among students of Villa College.
3. To identify their practices towards the prevention of CVD among students of Villa College.
4. To find out the relationship between the knowledge of CVD and practice towards prevention of CVD among students of Villa College.

### Research questions

1. What is the knowledge level of CVD among young adults studying at Villa College?
2. What is the attitude in prevention of CVD among young adults studying at Villa College??
3. Do college students practice healthy lifestyle?
4. What is the relationship between the knowledge of CVD and practice towards prevention of CVD among students of Villa College?

### Rationale and Justification

This study focuses on the knowledge, attitude and its

practice towards prevention of CVD and awareness among the students in Villa College of Male' City in Maldives. In this study, only Villa College will be included. This study will only be checking the basic knowledge of students regarding the disease (signs and symptoms), and the risk factors. Among college, youth of age group between 18 to 35 years will be included in this study.

### Methodology

The main aim of this study is to conduct a quantitative research in order to understand the correlation between knowledge of CVD and its practice towards prevention of CVD. A cross-sectional design was considered appropriate for this study. The target population of the study is both male and female students of ages 17 to 40 who are studying in Villa College foundation and diploma programme during Jan 2017 semester. This population was chosen because at this stage, majority of these students may not be aware of CVD risks and its prevention. According to the statement of the students and also my observations, numerous students spend maximum time-consuming unhealthy snacks in college, with less significance given to physical activities. Getting aware of CVD and its risk factors will help in preventing CVD. If the young populations are aware of the risks of CVD and adhere to a healthy lifestyle at a young age will reduce the risk of getting

CVD when they grow old. Therefore, college students at this age are very important to have sufficient knowledge of their health behavior.

### Results/Findings

The majority of the students in Villa College had poor knowledge of CVD. Only 1% of the students were found to have a positive thinking and attitude towards CVD prevention. Majority of the students in this college has good practices in their lifestyles which would help prevent CVD. However, the rest of the students have a bad practice in their lifestyle in preventing CVD. So most of the students in the college are concerned about their health and want to keep themselves safe from any threatening diseases like CVDs. That is why most students adapt to a healthier lifestyle for CVD prevention. The result of the study shows that the students pursuing higher education in colleges and universities have less than an adequate amount of information and awareness about CVD and the preventive measures associated with it. Having less knowledge about CVD and its causes and preventive measures would be risky as the required practices of preventive measures would not be followed by the students. It is important to have a maximum amount of knowledge to practice the best preventive measures. Having knowledge about the prevention of CVD also increases the positive attitude towards practicing these preventive measures. Positivity plays a major role in successful prevention. Moreover, the students need to be given a thorough awareness and their knowledge about CVD should be increased in order to avoid any crisis that might come along. The students need to be given awareness about this at a young age so that there would be a boosted up, early prevention.

### Implications

The promotion of cardiovascular health is important in college setting where young adults can be aware of CVD and its risk factors for prevention, as a large proportion of deaths worldwide can be attributed to this condition. Reducing the number of incidences, and consequently reducing the number of related deaths, can be accomplished by practicing prevention. The disease can be prevented by increasing the level of awareness regarding the causes or risk factors of CVD. The low level of knowledge might lead to bad attitudes and poor practice of healthy lifestyles. Young adults' preventive action, such as lifestyle modifications, can be instigated with the assist of awareness and preventive action, such as education. Educating young adults about risk factors will empower them

with the knowledge required to help reduce modifiable risks. This research study identified areas of knowledge deficit, which could potentially be utilized to help direct the focus of educational goals. The strong areas of knowledge identified, about risk factors such as hypertension and diet, could also benefit from further exploration. Although students were not able to display knowledge of these risk factors, the depth of their knowledge is not evident. Even though students appear less knowledgeable about areas such as cholesterol in cardiovascular health, further education could be beneficial to improve this knowledge base. Teaching topics could include, but are not limited to types of foods high in cholesterol, cholesterol-lowering pharmacological agents, appropriate cholesterol blood levels, the difference between LDL and HDL cholesterol, and non-pharmacological methods for the reduction of cholesterol. Such topics of education delve into the details of each risk factor, further equipping students with the knowledge necessary for the implementation of beneficial health changes. Education is one of many possible steps in prevention of cardiovascular disease. Early prevention and early detection are imperative for the potentiation of health, and the results of the current study can help achieve this by identifying strong and weak knowledge areas. Further research should be conducted to evaluate the knowledge of CVD risk factors in the general population, as well as other colleges. The community and the type of college may negatively or positively impact the amount of knowledge that an individual possesses about CVD. The current study was restricted in that the population of this college is rather homologous, and the results of the study pertain specifically to this college campus.

### Conclusion

Based on the results of the study, the following conclusions were made:

1. In general, undergraduate university students have low or inadequate knowledge about cardiovascular diseases that are a leading cause of death in the Maldives.
2. Individual health beliefs such as perceived susceptibility, severity, and barriers regarding CVD were low. However, perceived attitude about CVD towards practice was found high among villa college students.
3. Most of the students were at risk of developing cardiovascular diseases.
4. Smoking and stress causing CVD was identified among Villa College students.

5. Time to cook healthy meals and affordability of buying healthy foods were significant barriers in protecting cardiovascular health among Villa College students. The result of the study shows that the students pursuing higher education in colleges and universities have less than an adequate amount of information and awareness about CVD and the preventive measures associated with it. Having less knowledge about CVD and its causes and preventive measures would be risky as the required practices of preventive measures would not be followed by the students. It is important to have a maximum amount of knowledge to practice the best preventive measures. Having knowledge about the prevention of CVD also increases the positive attitude towards practicing these preventive measures. Positivity plays a major role in success-

ful prevention. Moreover, the students need to be given a thorough awareness and their knowledge about CVD should be increased in order to avoid any crisis that might come along. The students need to be given awareness about this at a young age so that there would be a boosted up, early prevention. As Ben Franklin once quoted, "An ounce of prevention is worth a pound of cure". Therefore, the students of colleges and universities should be informed about the importance of knowledge of CVD and its preventive measures.

#### **Research report available from:**

file:///C:/Users/Villacollege/Downloads/thesis%20ready%20to%20submit%20(1).pdf

## **Evaluation of civil registration and vital statistics system in the Maldives: Focus on mortality statistics**

**Author: Sofoor Kawsar Usman & Dr. Sheena Moosa**

**Research duration: November 2019– 2020**

### **Objectives**

The aim of this study is to determine the completeness and quality of data on death registration and causes of death (CoD).

### **Research questions**

1. What is the completeness and quality of data on death registration and causes of death (CoD) in the Maldives?
2. What are the areas for improving mortality statistics in the Maldives?

### **Rationale and Justification**

Timely, quality, reliable and usable mortality data, trends and causes of death information are important to public health policies and interventions. Information on mortality in the Maldives is presented as the key mortality statistics in annual health statistics reports. As of today, there is no published assessment or study on the Civil Registration and Vital Statistics (CRVS) of Maldives, although global estimates show that the quality of Vital Statistics (VS) with regard to completeness and recording of causes of death is low in the Maldives.

Due to the complexity and level of engagement by

different institutions in the CRVS system, mapping of the vital registration process is useful to capture and identify the bottlenecks, time lags and areas where efficiencies are needed. This in return can improve measurement of health outcomes through targeted investments for process efficiency. However, it must be noted that most of the CRVS systems around the world lacks long-term public policy investments. Thus, evidence-based advocacy is imperative to improve the CRVS system and work towards a greater political commitment for establishing effective processes and improving systems .

### **Methodology**

For analyzing the quality of mortality and causes of death data, the Analyses of Causes of National Death for Action (ANACONDA), developed by the Bloomberg Philanthropies Data for Health innovation program is applied to the mortality data of Maldives for the period 2009-2018. ANACONDA is a software application that assesses the accuracy and completeness of mortality, and cause of death data. It computes the vital statistics performance index (VSPI(Q)) which is a composite measure of the five dimensions of VS strength .

## Results/Findings

Using established methods and approaches, we observed that CRVS system performed well on the completeness of death registration, and the quality of age and sex reporting. However, the quality of cause of death data was poor with 50% of the International Classification of Diseases (ICD) codes classified as “major garbage codes”. Significant time lag was observed in the transmission and production of vital statistics.

## Implications

The evaluation of mortality statistics allowed appropriate improvement of mortality statistics in the country. This evidence is useful in the digital CRVS platform ‘GEMEN module’ planning and rollout by prioritizing areas for improvement in the CRVS system.

## Conclusion

The CRVS system in Maldives is complete with all deaths occurring within its territory registered and causes of death recorded. The two areas that require attention are the time taken for publication of vital statistics and quality of cause of death reporting. Appropriate re-engineering of the existing business process can build real-time mortality data, and regular quality assessment of death certificates with feedback to health facilities can bring sustained improvements in quality of vital statistics.

## Research report available from:

The full paper can be accessed from: <https://content.iospress.com/articles/statistical-journal-of-the-iaos/sji200748>

# Impact of COVID-19 on Persons with Disability in Maldives

**Author: Dr. Sheena Moosa, Fathimath Riyaza & Sofoora Kawsar Usman**

**Research duration: April 2020- March 2021**

## Objectives

The aim of this study is to explore the socio-economic situation and experiences during COVID19 pandemic.

## Research questions

1. What is the socio-economic situation of persons with disabilities (PWDs) during the lockdown in the early phase?
2. What are the stakeholder experiences in the responding to the needs of the persons with disabilities during the lockdown?

## Rationale and Justification

In March 2020 the World Health Organization (WHO) declared the outbreak of COVID-19 as a pandemic and the Maldives declared a public health emergency on 12<sup>th</sup> March 2020. With the first local case detected in the country a lockdown was enforced from 15<sup>th</sup> April to 28<sup>th</sup> May. During this time, it is anticipated that people will face a number of social and economic hardships. Persons with disabilities (PWD) is likely be disproportionately impacted by the pandemic due to limited access to basic services which they rely on.

## Methodology

As part of the research approved by the National Health Research Council (NHRC/2020/006), a self-enumerated online survey on Socio-Economic aspects of COVID-19 in the Maldives (Round 1 – May 2020) and in-depth interviews with key informants involved in the COVID-19 response directly or indirectly.

Disability has been measured based on the Washington Group Short Set on Disability (WG-SS). The questions used the International Classification of Functioning, Disability and Health (ICF) as a conceptual framework. The WG recommended cut-off has been used to define the population of persons with disabilities as ‘those with at least one domain that is coded as *a lot of difficulty* or *cannot do it at all*.’

## Results/Findings

A disability rate of 14% (N=349) among the response population of 2470, which is much higher than what was found in the recent studies such as Household Income Expenditure Study 2019, that reported a prevalence of disability is at 8%. The findings show that stress resulting from confinement was higher (at 62%) among PWDs compared to those without disabilities

(44%). PWDs also used more online health services (24%) compared to those without disabilities (19%).

The qualitative findings indicated that issues around protection of PWDs were largely left behind in the COVID-19 response. Planning and coordination, working outside of the national response, exclusion and business continuity of service providers are the key themes observed.

### Implications

The research identifies the specific vulnerabilities of PWDs, particularly at the time of a pandemic that required movement restriction and associated disruption to access to service. The caveats in the response is highlighted that needs to be address in ongoing pandemic response and future pandemic planning.

### Conclusion

The vulnerabilities of PWDs were pronounced during

the lockdown driven by poor coordination with government institutions and Civil Society Organizations (CSOs) working with PWDs. Establishing a social protection cluster and strengthening the networking with CSOs with the relevant government institution that has the issue specific mandate, is critical to ensure inclusivity of PWDs and addressing their needs in future pandemic response. This empower the families and PWDs needs to be sustained to ensure they are not left behind during such emergencies in the future.

### Research report available from:

The full report can be accessed from: <https://maldives.un.org/index.php/en/102379-impact-covid-19-persons-disability-maldives>

and

<https://mnu.edu.mv/wp-content/uploads/2020/09/Impact-of-Covid19-on-Persons-with-Disability-in-Maldives.pdf>

## Early Measures for the prevention and containment of COVID-19 in the Maldives: A descriptive Analysis

Author: Dr. Mariyam Suzana, Dr. Sheena Moosa, Dr. Fathmath Nazla Rafeeg & Sofoora Kawsar Usman

Research duration: December 2019– March 2020

### Objectives

This study is a descriptive analysis of the early measures for prevention and containment of COVID-19 that contributed to delaying the pandemic entry into the country and helped contain the first wave of the outbreak in the Maldives.

### Rationale and Justification

The Maldives attracts more than one million travelers annually placing it at a high risk of imported epidemic-prone diseases; and it has one of the most congested capital cities in the world making it a conducive environment for infectious diseases.

### Methodology

This is a descriptive study of publicly available secondary data. Social media channels, websites of stakeholder agencies, developmental and technical agencies both nationally and internationally during 1<sup>st</sup> December 2019 to 30th March 2020 were analyzed.

### Results/Findings

The government of Maldives initiated its first public health measures as early as January and as of March

2020, levied more than two hundred interventions to combat the outbreak of COVID-19. Unlike many countries, which imposed restrictions for weeks at a stretch, Maldives applied a strategy of gradual intensification of measures, imposed localized restrictive measures compared to a national lockdown and used multiple communication mechanisms to educate and engage the community. The public-private partnerships explored were strategic in mitigating the loss of income to the tourist industry as well as in breaking the chain of transmission. Maldives delayed the entry of the pandemic into the country by about 90 days, and maintained its testing rate at fourth highest among United Nations Small Island Developing States and highest among the South East Asian countries.

### Implications

Findings of this study offers best practices in the management of an epidemic from a very congested small city context. The engagement and collaboration of multiple stakeholders specifically the exemplary public-private partnerships that the Maldives government explored for this outbreak were creative and proved effective in minimizing a community spread. Constant



risk communication strategy used in the operation bombarded the Maldivian population with daily updates of the disease eliminating any room for misinformation. Despite the novelty of the virus and the limited research and literature on the virus, the local medical teams achieved low Case Fatality Rates (CFR), a high testing rate and managed a flat spread of the epidemic in the Maldives.

### Conclusion

The management of a global pandemic in a resource constrained, tourism reliant, and import-oriented vulnerable economy requires decisive leadership, collec-

tive effort of multiple stakeholders, strategic partnerships, and a precedence for public health measures over economic considerations. Further stringent measures and stricter compliancy are needed to combat community transmission of the disease.

### Research report available from:

The full paper can be accessed from: [https://journalhss.com/wp-content/uploads/jhss\\_52\\_251-264.pdf](https://journalhss.com/wp-content/uploads/jhss_52_251-264.pdf)

## Differential Forecasting of the Spread of COVID-19 in Small Islands with Containment Interventions

Author: Sofoora Kawsar Usman, Dr. Mariyam Suzana & Dr. Sheena Moosa

Research duration: June 2019– September 2020

### Objectives

The aim of this study is to determine the epidemic dynamics of COVID-19, quantify the impact of the non-pharmaceutical interventions (NPIs) and forecast infection parameters in two types of island settings.

### Research questions

1. How many cases can we forecast in different non-pharmaceutical containment measures?
2. How many deaths can we forecast in different non-pharmaceutical containment measures?
3. What are the most effective NPIs for small island states?

### Rationale and Justification

Geo-spatial aspects affect the susceptibility and containment of infectious disease transmission. Small island geographies may make containment easy, but effective quarantine and isolation may be challenging due to different population density and living conditions. Unlike studies of pandemics that spread in huge population and landlocked countries, only a few limited studies have looked into its spread in island settings which can have natural containment dynamics.

The small islands in the Maldives, surrounded by sea make containment easy, yet it becomes a challenge to

effectively isolate those on the island. However, due to the different population density in the capital island of Maldives and other islands, we modeled the effects of the NPIs on the capital and other islands separately. This is the first time the data is publicly available opening a unique opportunity to research the COVID-19 pandemic spreading through the geographically contained island communities.

### Methodology

The Susceptible, Infectious, Recovered, Deceased (SIRD) model is used to forecast the spread of COVID-19 in the dense and congested urban capital island compared with the less populated small island of the Maldives. The model parameter values were informed by published materials and fitted to the Maldives.

### Results/Findings

The model shows that the reproduction number  $R_0$ , ranged between 1 and 2 in all the NPI states, and  $R_0$  could be decreased to less than 1 with combined interventions (NPI3-NPI5). The effects of interventions are particularly effective in smaller islands, and possible to bring down  $R_0$  to less than one even with minimal interventions. The densely populated capital city, Male' will require double the time and double the combinations of NPIs to that required by other smaller islands to reach  $R_0$  below 1.

**Implications**

The forecasts for Maldives allowed for appropriate and more realistic risk estimation for the islands in the Atolls and Male' city. This evidence is useful in pandemic response planning by prioritizing geographic locations for capacity building and selection of the appropriate NPIs for containment of the spread of the pandemic across the country .

**Conclusion**

Epidemic modelling has greater utility for policy and planning when modelled for different populations separately rather than for the whole population especially when there are many geographically dispersed islands in the country, such as those in a number of Small Island Developing States. Findings from this model suggest that each community needs a unique mix of the NPIs based on the density and living conditions of the community.

**Research report available from:**

The full paper can be accessed from: <https://www.sciforschenonline.org/journals/epidemiology-public-health/JEPHR201.php>

## NATIONAL HEALTH RESEARCH COUNCIL (NHRC)

The National Health Research Committee was established in 1999, as a strategy outlined in the Health Master Plan 1996-2005 to strengthen the development and implementation of research relating to the health sector. With the establishment of the National Health Research Committee, all health related research had to be submitted to the committee and approval sought before implementation. In this regard, the Ministry of Health issued a circular (23-C3/99/C-24) on August 15, 1999 to implement this strategy effective from September 01, 1999.

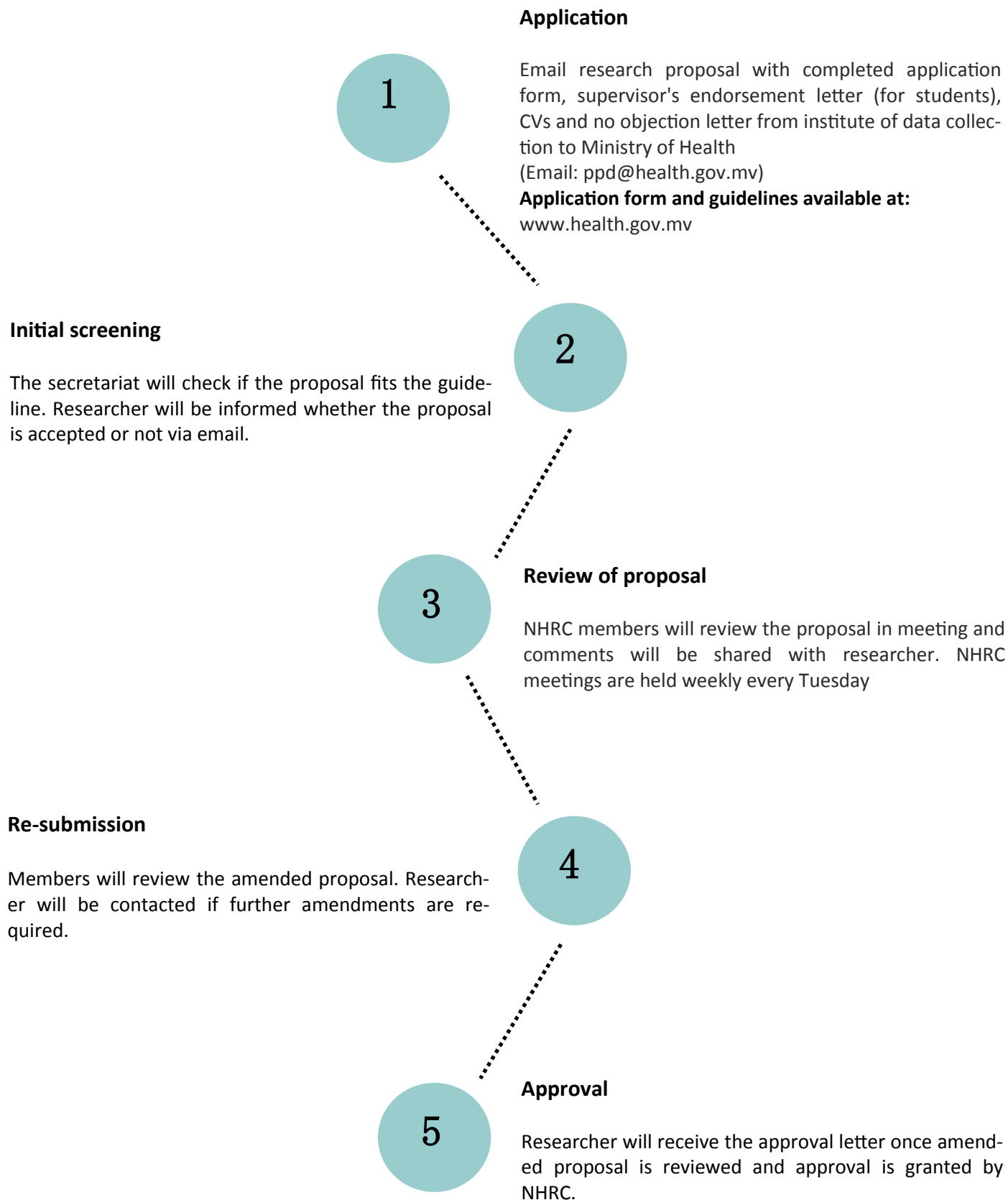
The National Health Research Council (NHRC) was formed on 20th May 2019 under the Health Services Act (29/2015) and Health Research Regulation (R-1006/2019). The responsibilities of the council include undertaking the scientific and ethical review of all types of health research proposals, including clinical trials, as well as monitoring of all approved health research.

The NHRC has received several research proposals for approval. A guideline was developed to assist researchers such as medical and nursing practitioners, programme managers and students in developing research proposals for submission to the NHRC.

### **Representatives in the National Health Research Council**

1. Ministry of Health / Permanent Secretary
2. Ministry of Health / Policy Planning and International Health
3. Ministry of Health / Maldives Food and Drug Authority
4. Ministry of Health / Health Protection Agency
5. Ministry of Health / Quality Assurance Division
6. Ministry of Health / Dhamanaveshi
7. National Bureau of Statistics
8. Faculty of Health Sciences
9. Islamic University of Maldives
10. Indira Gandhi Memorial Hospital
11. Ministry of Education
12. Ministry of Islamic Affairs
13. Attorney General's Office
14. Maldives Nurses Association (NGO)
15. Individual researcher

# RESEARCH REGISTRATION AND APPROVAL PROCESS



## NHRC APPROVED RESEARCH LIST 2019

1. Factors Predicting Medication Adherence in Patients with Primary Hypertension in Male', Maldives. (Researcher: Husna Hassan)
2. Nutrition Characteristics and Delivery, and its Association with Mortality in Critically Ill Patients in The Tertiary Hospitals in Greater Male' – Maldives (Researcher: Asiya Abdul Raheem )
3. Factors influencing depression among dependent elderly people living in Male' who are registered for home visits under Dhamana Veshi (Researcher: Irasha Ibrahim Didi )
4. Chikungunya in Maldives: Characterization of the 2019 Outbreak (Researcher: Dr Hisham Ahmed Imad)
5. Visual impairment, refractive services and barriers to eye care services to preschool children in Male'/Maldives (Researcher: Fathimath Nestha Mohamed)
6. Parenting Styles, Diagnosis Severity and Recent Diagnosis of ASD on Parental Stress (Researcher: Fathimath Ashan)
7. Global Youth Tobacco Survey 2019 Maldives (Researcher: Ministry of Education)
8. Effectiveness of 'Tiny Hearts' programmes in addressing Congenital Heart Diseases in Maldives (Researcher: Dr. Sheena Moosa)
9. Assessment of Hepatitis B Surface Antigen Prevalence among Children in Maldives to Evaluate the Impact of Hepatitis B Vaccination Program (Researcher: Health Protection Agency )
10. Quality of Work Life Among Nurses at Indira Gandhi Memorial Hospital in the Maldives: A Cross-Sectional study (Researcher: Aishath Hudha)
11. Does Social Support explain the psychosocial wellbeing of family members of Substance Use Disorder persons in the Maldivian population? - A qualitative study (Researcher: Azra Abdul Sattar)
12. Trend analysis of mortality rates and causes of death in Maldives from 2009 to 2018 (Researcher: Sofoora Kawsar Usman )
13. A cross-sectional study on food safety knowledge, attitude and practices of food handlers employed in restaurants of Male' Maldives (Researcher: Khalisa Mohamed )
14. A Grounded theory study of Islamic – Spiritual framework to deal with loss and grief among Maldivian cancer patients (Researcher: Shehenaz Ismail )
15. Study of new-born birth defects in the Maldives: 2016-2019 (Researcher: Dr. Faisal Ahmed )
16. Assessment Of Trans Fat In Foods And Evaluation Of The Policy Environment On Oils And Fats (Including Trans Fats) (Researcher: Dr. Aishath Naila, The Maldives National University )
17. The Relationship between Iron Deficiency and Thyroid Function in Maldives: A Study of Patients Attending IGMH Laboratory (Researcher: Dr. Sheeza Ali )
18. Predictors of Breast Self-Examination, Clinical Breast Examination and Mammography Screening Uptake Among Women in Male' Region, Maldives (Researcher: Aishath Niyaf )
19. Risk of radiation exposure, awareness and knowledge among patient and radiographers in the tertiary care hospitals in Maldives (Researcher: Ikram Hameed )

# HEALTH RESEARCH PRIORITY AREAS 2017-2019

Health Research Priority areas will be updated in 2021

## Establishment of Burden of Disease

1. Assessment of prevalence of major NCDs – diabetes, cardiovascular diseases including stroke, chronic respiratory Disease and cancers (Breast, oral).
2. Assessment of behaviors, lifestyles and different risk factors especially obesity and their contribution to NCDs
3. Thalassemia and its impact on quality of life
4. Measurement of long-term sequelae and complications of chronic conditions (e.g.; diabetes and hypertension)
5. Measurement of burden of mental health disorders
6. Assessment quality of life in people with chronic conditions including mental health
7. Assessment of abortion situation in the Maldives
8. Prevalence of TB and emerging new incidence of TB

## Assessing Cause and Risk Factors

1. Role of dietary habits in relation to malignancy and other NCDs
2. Health impacts of pesticide overuse in agricultural areas of Maldives
3. Role of Environmental factors in development of cancer in the population
4. Understanding the determinants of physical inactivity among Maldivians and its role in obesity
5. Measurement of food consumption patterns in Maldives
6. Measurement of prevalence of i) smoking and ii) smokeless tobacco users among different age groups
7. Assessment of air quality and its effects on health

## Assessing Effectiveness of Interventions

1. Effectiveness of various interventions addressing NCD's and its risk factors (e.g.: diet and physical activity related interventions such as ban on energy drinks advertisement or setting up of outdoor exercise opportunities and/or centers)
2. Effectiveness of interventions to reduce traffic accidents in urban areas of Maldives
3. Effectiveness of interventions to improve quality of life of people with disabilities
4. Effectiveness of prevention measures of Thalassemia utilized in Maldives
5. Assessment of Anti-Microbial Resistance (AMR) situation in Maldives
6. Assessment of anti-biotic prescription and consumption patterns
7. Understanding the situation of low fertility levels with low Contraceptive Prevalence Rate (CPR)
8. Effectiveness of community interventions in dengue control

## Clinical Management

1. Identification of key challenges faced in clinical management outcome of Dengue at health care facilities.

## Health System/ Operational Research

1. Identification of challenges faced by service providers in delivering quality health care
2. Review of existing practice of dealing with alleged negligence cases
3. Identification of barriers and supporting/enabling factors in referral of patients between health facilities
4. Identification of supporting/enabling factors and interventions required for joining service and retention of health care professionals (e.g.: doctors, nurses, etc.) in public sectors
5. Assessment of Maldivian health system capacity to address national disasters and emergencies
6. Measurement of quality of care in health sector of Maldives and impact of Quality Improvement Programs
7. Public satisfaction as a measure of health system performance

## Health Care Financing


1. Comprehensive evaluation of Social Health Insurance System including public expectation and satisfaction
2. Identification of mechanisms to ensure financial sustainability of health systems and Social Health Insurance System
3. Identification of appropriate models for Public Private Partnership in health sector of Maldives
4. Involvement of Private Providers and NGOs in health promotion activities

## Health Policy Issues

1. Effectiveness of existing regulatory framework in implementing current policies
2. Assessment of the level of stakeholder involvement in developing public health policies
3. Evaluation of the current public policy development process with an aim to make it more transparent and evidence based

## Social Determinants

1. Measurement of inequities in various key health parameters of Maldives (e.g.: by gender or other special/vulnerable groups)
2. Coverage of the disadvantaged/vulnerable population groups with universal coverage scheme
3. Reasons for Maldivians seeking help from National Social Protection Agency (NSPA) in addition to Aasandha
4. Migrant health issues in the Maldives



Health Information and Research Section  
Policy Planning and International Health (PIH) Division  
Ministry of Health (MoH)  
Tel: +960 3328887  
Fax:+960 3328889  
Email: [ppd@health.gov.mv](mailto:ppd@health.gov.mv)  
Website: <http://www.health.gov.mv>