Analysis of Psychosocial Stressors and Chronic Psychological Distress on Preventative Hypertension Screenings in Northern Thailand

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Abstract

High blood pressure (HBP) or hypertension is currently the most prevalent chronic disease in the world affecting approximately 970 million individuals. However, that estimate only accounts for those that have been properly diagnosed. In Thailand, an estimated 65% percent of individuals living with hypertension have been diagnosed which means one third of the affected population remains untreated and at risk of severe health consequences (Howteerakul et al., 2006). The major co-factors influencing screenings and diagnosis are still currently unknown due to the narrow interest in only post-diagnosis research. This study looked at the complex relationship between psychosocial stressors, psychological distress and preventative hypertension screenings in Northern Thailand. Through interviews, observational studies and relevant literature it was found that there was indeed a proposed relationship between stressors, distress and screenings. Local health workers identified the need to address certain social factors such as income and occupation as they were stated to be responsible for some of the distress in the local community. Large stakeholders such as the WHO, MoPH and CDC were found to have minimal investment in the topic of the study. Although the local community healthcare workers proved to be very effective when addressing this complex relationship. Future studies would be necessary to measure the extent and significance of this proposed relationship as this study did not provide quantitative support.
Introduction

Hypertension (HPT), also known as high blood pressure (HBP), currently affects approximately 970 million people worldwide (WHF 2016). It is estimated that around 6% of global deaths can be attributed to HPT, which is currently the most common treatable risk factor of cardiovascular disease (Wolf-Maier et al., 2003). According to a recent study, 54% of stroke, 47% of ischemic heart disease and 25% of other cardiovascular disease can be related to HPT. Of those individuals diagnosed with HPT, almost 80% of the burden of disease was found in low socioeconomic communities (Lawes, Hoorn and Rodgers, 2008). Over the past three decades, treatment and management of hypertension has improved resulting in a decrease of coronary heart disease (CHD) and stroke related mortality (Lenfant, 2002). However, in the global context HPT still remains a serious public health issue. A large percentage of asymptomatic and undiagnosed HPT will go untreated (Joint National Committee, 1997).

Hypertension remains a serious public health issue in Thailand especially in more rural areas. Recent studies found that around 22% of the study population in central Thailand had primary hypertension. Among those with systematic high blood pressure, around 65% were aware of their diagnosis meaning 35% were unaware and would have gone untreated. Additionally, only 43% of those aware were actually seeking treatment (Howteerakul et al., 2006). Why were 35% of HPT patients unaware of their diagnosis?

Influences that affect undiagnosed hypertension patients are not well known or studied. Consequently, this gap of knowledge has caught the attention of researchers specifically with patients reporting stressors and increased distress. Psychosocial stressors are environmental conditions or stimuli that cause psychological distress, the biological reaction, in the human body. Current research suggests that there is a relationship between psychological distress and increased
risk for HPT. However, the literature lacks information on the relationship between psychosocial stressors and preventative methods. How do stressors affect the success of hypertension screenings and or the target population? Much of what is studied today focuses post-diagnosis events, increasing treatment effectiveness, adherence and other outcomes. Consequently, not much has been done to look at populations that are undiagnosed and assess the methods of identification. The aim of this study was assess the relationship between psychosocial stressors, psychological distress and hypertension screenings specific to Northern Thailand through interviews with local healthcare providers and experts, observation and previous related research in the area.
Biomedical Nature

Hypertension

Blood pressure is defined as the amount of force exerted on an individual’s arterial walls via increased circulation. When the pressure becomes overly exertive (hypertensive), stretching of the arterial lining can occur leading to clinical symptoms and adverse health effects (AHA, 2015). The American Heart Association categorizes these adverse health consequences into six different categories.

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<tr>
<td></td>
<td>Overstretching of arterial walls minimizes structural integrity which can eventually lead to ruptured blood vessels (hemorrhagic strokes and aneurysms)</td>
<td>Micro-tears in arterial lining due to overstretching of tissue. Scars can act as nets and catch debris in blood stream such as cholesterol and blood cells.</td>
<td>Trapped blood cells can form clots narrowing arterial opening eventually limiting blood flow to regions of the body.</td>
<td>Cholesterol and plaque buildup can damage arterial blood flow and eventually limit blood supply to heart and other parts of the body</td>
<td>In case of arterial blockage, organ on the distal side of the blockage will not receive blood which will result in failure and possible death.</td>
<td>The circulatory system has to work harder to supply blood to extremities due to constrained arteries and veins.</td>
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</table>

Since hypertension is not an acute disease, chronic treatment is necessary to manage blood pressure effectively. Depending on the individual patient, medical treatment can consist of medication and or lifestyle changes. The most commonly used medication is thiazide diuretics which acts on the patient’s kidneys ability to filter and eliminate water and sodium to reduce blood
volume. Other medications used include beta blockers, angiotensin-converting enzyme (ACE) inhibitors, calcium channel blockers and renin inhibitors. Regardless of what medication the patient takes, a lifestyle change will most likely be needed in addition. Patients will be told to eat healthier, exercise regularly, quit smoking and limit alcohol consumption and finally maintain a healthy weight (MayoClinic, 2015).

**Psychological Distress**

Psychological distress is an organism’s biological reaction to environmental psychosocial stressors. In today’s world, humans no longer face environmental pressures such as predation and basic survival tactics. Even though modern humans rarely have a need to exhibit fight or flight responses, physiological changes still occur when stimuli are applied. It is relatively studied and confirmed that psychological distress can modify biological aspects such as the human immune system and hormone levels (Segerstrom and Miller, 2004). For example, in times of serious hardship, distress can stimulate the nervous system to synthesize large quantities of vasoconstricting hormones that elevate arterial blood pressure and possible risk for chronic hypertension (Kulkarni, 2016). Stimuli and stressors that can affect the human body can be further defined into five categories according to the duration and course (Elliot and Eisdorfer 1982)

<table>
<thead>
<tr>
<th></th>
<th>Acute time-limited</th>
<th>Challenges including public speaking and arithmetic</th>
</tr>
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<tbody>
<tr>
<td>2</td>
<td>Brief naturalistic</td>
<td>Real-life-short-term challenges such as academic exams</td>
</tr>
<tr>
<td>3</td>
<td>Stressful event sequences</td>
<td>Focal events like lose of family member or natural disaster</td>
</tr>
<tr>
<td>4</td>
<td>Chronic stressors</td>
<td>Life-long pressures to modify life according to social roles. Also includes financial and social stability.</td>
</tr>
<tr>
<td>5</td>
<td>Distant stressors</td>
<td>Traumatic experiences</td>
</tr>
</tbody>
</table>
Conceptual Map

In the conceptual model below both the biosocial influences and biological mechanisms of hypertension are methodically mapped to display the complex relationship between co-factors and hypertension. However, this study specifically focuses on the effects of psychological distress and psychosocial stressors on preventative hypertension screenings which have been highlighted in dark. The remaining sections of the map are included although they will not be discussed in detail.

The identified boxes are defined in the table provided below:

<table>
<thead>
<tr>
<th>Psychosocial Stressors</th>
<th>Social pressure and isolation, public humiliation, failure, social deviance (from Family structure, institutions, culture and traditions, social circles and class etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Distress</td>
<td>Biological reaction to stressors: vasoconstricting hormone influx, increased heart rate, fight or flight autonomic nervous response</td>
</tr>
<tr>
<td>Public Health Screenings</td>
<td>Public hypertension screenings at local health centers, health promotion and events</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Clinical identification of chronic hypertensive individuals in the community (BP&gt;140/90)</td>
</tr>
</tbody>
</table>
The arrow from “psychosocial stressors” to “public health screening” represents the influence certain stressful events can have on the effectiveness and success of hypertension screenings and patient attendance. As stated above stressors are social constructions and not biological reactions. The arrow from “psychological distress” to the arrow connecting “public health screening” and “diagnosis” represents the biological influence distress can have, whether someone is wrongly diagnosed with pre-hypertension/hypertension or not diagnosed at all. This model does recognize that in order to incur distress and individuals must be exposed to a certain stressor so that is represented with an arrow between stressors and distress.

**Current and Past Social Factors**

*Income*

Living in constant poverty can severely affect an individual’s health outcome. Recent studies have analyzed income as a psychosocial stressor. They found that income and financial stability were direct predictors for psychological distress (Santiago, Wadsworth and Stump, 2011). The World Bank considers Thailand an upper middle class income country with 10.5% of the nation falling within the parameters of poverty (WB, 2016). This statement should be taken with a grain of salt, however it is an interesting point of perspective since bordering countries Laos, Cambodia and Burma have nearly double the poverty rate. As discussed earlier this study is interested in looking at the relationship between psychosocial stressors and hypertension primary prevention (public health screenings). Interestingly, income can be visualized in two ways according to the conceptual map above. Income can act as specific psychosocial stressor inducing psychological distress, but income can also act as an environmental influence to other forms of psychosocial stressors. In San Kamphaeng district in Chiang Mai province, residents are primarily
peri-urban workers that either tend to the fields or commute into the city to work or sell goods. According to the Health Director at San Kamphaeng Sub-District Hospital, most families in this region are living on a standard income equivalent to 10 USD$ a day which is a little over the minimum wage here in Thailand. She stated that certain individuals might prioritize certain costs such as basic living expenses (food, water, electricity and transportation) over medical visits and medications. She simply stated that someone can live years with hypertension before problems start to arise, however that same person can only live up to 4 days without water. If chronic non-communicable diseases such as hypertension are minimalized and not seen as an emergent health risk, individuals might not utilize health centers or go in for yearly check-ups that could possibly identify asymptomatic hypertension. In this case lack of income acts as a stressor limiting someone’s ability perceive hypertension as health priority thus decreasing visits to health centers. However, income or lack of income can be a psychosocial stressor that induces a form of distress within the individual. According to the head registered nurse at Baan Dallat Sub-District Hospital in San Kamphaeng, some individuals complain of increased distress because of lack of income and ability to support family. This distress can directly increase hypertension through biological mechanisms and influence diagnosis. As stated before hypertension is influenced by distress so on a particular day if an individual is experiencing increased distress their blood pressure could be temporarily increased leading to a reading not representative of their normal BP.

**Occupation**

In terms of stress and its impact on hypertension preventative screenings it is important to notice that certain occupations lend to higher levels of stress, increasing the risk factor for more specific groups of people. In an older study done in Australia, they found that farmers and their families exhibited significantly higher levels of stress than their non-farmer counterparts (Cary
and Weston 1978). Connecting this finding to Thailand, nearly 14 million or 40% Thai working individuals are in the agricultural sector (NSO, 2015). The agricultural system in Thailand is immensely important not only for self-support but also demands from other regions and countries. In Mae Cheam region of Northern Thailand, the majority of land is currently being used for commercial or private agriculture. According to a local community health director, within the last two decades much of the agricultural system has changed from a diverse subsistence farming culture to a mono-export system where most products (majority corn feed) are exported to more urban areas and even other countries. He did not speak specifically of hypertension and or non-communicable diseases but he did speculate that the decrease in subsistence farming could result in a greater dependency on others and a monetary system which could then directly lead back to income affecting health prevention and screenings. In addition, certain occupations in lower income and geographic isolated communities are self-employed and any time spent outside of the shop is a loss in profit. According to the community health director in San Kamphaeng, many working males do not show up on health screening days due to work conflict and inability to take time off. Instead they utilize the district hospital in emergent cases due to longer hours and times of service. Occupation can be a major psychosocial stressor that prohibits individuals from attending health screenings, limiting the possible diagnosis of hypertension. Similar to income, occupation can also be a stressor that induces distress which ultimately may not prevent an individual from attending the clinic but can influence the diagnosis and possible management plan. In San Kamphaeng district all hypertension screenings are dependent on the patient, meaning individuals must self-present in order to be seen. According to some healthcare volunteers, they believed that occupation related stressors were the most impactful factor when someone was deciding to come to the clinic for screening. As Thailand’s society increasingly becomes more of
a monetized system occupation will also become more influential in other daily decision such as health and wellbeing.

**Stakeholder Response**

*Thai Ministry of Public Health (MoPH)*

From 2004 to 2009 the Thai Ministry of Public Health conducted a nationwide screening for hypertension. Their goal was to determine the changes in prevalence, awareness, treatment and control of hypertension and the metabolic risk factors in the Thai population. They found that even though there had been improvement from the last study, a large proportion of hypertensive patients remained untreated with uncontrolled systolic and diastolic blood pressures (Aekplakorn et al. 2016). They recommended increased screenings and the use of cheaper and more effective daily medication. According the health director at San Kamphaeng Sub-District Hospital, the MoPH recognizes that stress can impact hypertension however not much is done to identify specific stressors. Most research has looked specifically at the biomedical nature of distress; mechanisms inducing hypertension rather than the public health stressors that lead to this distress. Local healthcare workers indicated that the MoPH had focused long periods of time on communicable diseases since positive outcomes were often possible in a shorter period of time. While on the other hand, non-communicable or chronic conditions required long term programs and many years to see success. They explained that screenings for non-communicable diseases could be affected by stressors and or distress in patients however they believed the first step should be to increase the amount of screenings. They did mention that the MoPH had been discussing the effects of low income, a major stressor in communities, on health screenings with hopes that they could increase coverage and identification of existing hypertension cases that have yet to be diagnosed.
**Center for Disease Control (CDC)**

The CDC currently is working alongside the Thai Ministry of Public Health (MoPH) to assist in increasing surveillance programs to more remote regions of the country. They have jointly started the Behavioral Risk Factor Surveillance System (BRFSS) which was initially tested on hypertension surveillance in the Sukothai province. Interestingly the CDC does recognize the importance of mental health in hypertension surveillance, however most programs have not made it to Thailand or any other foreign countries. In the United States, the CDC has extensively looked at the effects of stressors and distress on all aspects of hypertension however they have been focusing on other prevention methods and research in Thailand (CDC, 2016) As the CDC is a model institution, they play an important role in the international public health field. The CDC is a major stakeholder in hypertension prevention and screening since a major portion of protocol used here is derived from the CDC.

**World Health Organization**

The WHO does not specifically have protocol or recommendations for Thailand as a country but they have released interesting remarks about South East Asia as a whole. The 2025 proposed target to decrease the burden of hypertension is centered around prevalence and not incidence. They recommend decreasing the price for hypertension health services and increasing the quality of available services. The WHO does not specifically indicate or mention the relationship between stressors/distress and prevention measures such as screenings. Although, by decreasing the cost of services related to hypertension management the WHO is initiating a discussion regarding the influence of income. However, this is a rather reactive solution as this policy only helps those that have been diagnosed and omits the underlying population that is asymptomatic and undiagnosed.
Community health workers and other non-health agencies:

In San Kamphaeng, community health workers are a vital part of the screening process and as stated before many of them are aware of the effects of distress and certain stressors such as income and occupation. Many of the community health workers are also diagnosed with hypertension. Therefore, they have a personal understanding and experience which can be very helpful when approaching patients. This group of hardworking individuals are responsible for promoting health announcements and convincing locals to attend screenings. They are very efficient as they speak the local language and know most of the residents in the area. Many of these individuals have expressed their concern that other stakeholders such as the Ministry of Public Health do not spend enough time analyzing specific co-factors such as stressors and distress when modifying policies and protocol. Some have taken matters into their own hands. A community health center in Mae Chaem District runs village screening events every month in the surrounding villages to increase coverage. The health workers explained that leaving the village to come down for screenings was not beneficial for the patients due to occupations in the fields and loss of income. So they decided to take the clinic to them. This program is extremely effective as it relieves some of the stressors that could potentially affect identification of new hypertension cases.

Ongoing Challenges and Conclusion

Even though all three of these large agencies recognized the effects of distress and stressors on hypertension preventative screenings, it is the community health workers that are actually most aware and educated. The village health workers take time to reach out to all patients regardless if they cannot come to the clinic. This kind of care is becoming less and less common. While the remaining few are making great strides improving community health, success will only arise from
the ongoing relationship between both the local community and these larger stakeholders. Unfortunately, there is only minimal evidence of this partnership, most policy is written in accordance with these larger entities thus most programs are fairly reactive and generalized to protocol that is not effective in the area. The inclusion of both parties guarantees that all voices are being heard and in a country like Thailand where many go silent, it is really important. In comparison to surrounding countries such as Laos, Myanmar and Cambodia, Thailand has a significant lead on quality of hypertension programs and research. Though, coverage and screening success could be dramatically increased with some minor changes and modifications to the current system.

Secondly, mental health stigmatization continues to be a major issue as Thai society is considerably dependent on “saving face” and maintaining a good reputation. Individuals will be less likely to report psychological distress with social stressors such as reputation and other social influences. This is an example of how stressors can differentiate between cultures and countries. In Thailand, the outer appearance is valued to high regards and so mental health is sometimes overlooked. Although in countries such as the United States and Canada, mental health is widely discussed in the open so social pressures exist but at lower levels. As stated before stressors can have a major impact on health screenings, so if the protocol remains the same across the United States and Thailand the success will ultimately differ due to varying societal differences. In order to appropriately discuss the topic of communicable disease prevention and screening each health center must operate through their own lens and modify the policy to adequately serve the needs of the local community. As mental health increasingly comes up to the table in Thailand, it will open up more opportunities to discuss the effects of stressors and distress on hypertension screenings as well as many other social factors that have been ignored in the past.
Lastly, the research mindset needs to transition from reactive post-diagnosis management to proactive prevention and early diagnosis. There is an astonishing lack of literature corresponding to pre-diagnosis hypertension. Chronic non-communicable diseases such as hypertension require reciprocating participation from both the healthcare provider and the individual. It is rather easy to identify faults regarding health care delivery. However, the difficult question is how do you identify problems in the community that are affecting individuals before they are diagnosed? Consequently, there is little conversation regarding the effects of psychosocial stressors and psychological distress on hypertension screening. As stated before, this question can not be answered only at the healthcare level. It will require an assessment on multiple different levels and will only be possible with cooperation of individuals from the local to international level.
References


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