Investigating Local Understandings of Cardiovascular Disease

ATS3248 Field Methods in Anthropology and International Development

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Introduction

Cardiovascular disease (CVD) reportedly accounts for 17.1 million deaths worldwide per year and is a major public health issue in Malaysia (World Health Organisation 2009). This study investigated local understandings of CVD in Segamat, Malaysia. This report focuses on the contrast between biomedical and lay explanations of CVD, illustrating how socio-cultural surroundings shape community understandings of this disease. All research participants referred to in this paper have been assigned pseudonyms.

Background

CVD is the leading cause of death in Malaysia and is responsible for the majority of deaths resulting from non-communicable diseases (Ministry of Health Malaysia 2011; World Health Organisation 2011). CVD has been recognised as a critical public health issue by the Malaysian government, which has promoted measures such as health screening to combat the growth of CVD and other non-communicable diseases (Ministry of Health Malaysia 2010).

The World Health Organisation (WHO) identifies the key behavioural risk factors for heart disease and stroke as including 'unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol'. The influence of these risk factors on the body may become apparent in high blood pressure, blood glucose and/or blood lipids, as well as individuals becoming overweight (2016). The WHO's definition of CVD emphasises the effect on organs such as the heart and brain as well as the role of the blockage to and damage of vessels (2016).

Recent decades have seen the prevalence of CVD risk factors escalate in Malaysia: dramatic increases in hypertension, diabetes and hypercholesterolemia were recorded in the period from 1996 to 2006, during which the rate of mortality from CVDs also rose from 15.7% to 25.4% (Ministry of Health Malaysia 1996; Ministry of Health Malaysia 2006). The role of social determinants in the development of these risk factors is complex and at times unclear. The relationship between cardiovascular disease risk factors and socioeconomic status has been documented in numerous studies (Rasiah et al. 2013; Amiri et al. 2014) but disputed by Lian et al. (2010).

The rural setting of this study assists in exploring the impact of geographic location on CVD risk factors. CVD risk factors have a more immediate association with the context of urban development than they do with rural settings (Institute of Medicine U.S. 2010). However, the prevalence of risk factors in Malaysian semi-rural settings has been studied in Kuala Langat, Selangor (Chin & Pengal 2009). This involved conducting health screenings over 6 weeks followed by a survey of 1417 participants, which revealed a high prevalence of smoking, high levels of abnormal cholesterol and high rates of reported and undiagnosed diabetes. Perhaps most significantly, the study predicted that 55.8% of male participants and 15.1% of female participants had more than a 20% chance of acquiring coronary heart disease over the next 10 years. Similarly, a study into a rural community in Sarawak reported a high prevalence of CVD risk factors (Chang, Lee & Chea 2012). However, another study in rural Sarawak found socioeconomic status and geographic location had no significant bearing on the development of CVD risk factors (Lian et al. 2010).This report may assist in clarifying the relationship between geographic location and CVD.

Although it is emphasised that CVD can largely be prevented, data about the prevalence of this disease and its risk factors omit explanations of how lay people shape their behaviour in response to the impact of CVD on public health. In practice, strategies and initiatives designed to reduce CVD rely on lay people adjusting their behavioural patterns to their perception of this illness. Lay people are expected to incorporate biomedical concepts into their everyday lives without a formal body of knowledge. A useful way to look at the interplay between formalised medical knowledge and informal lay beliefs and practices is through the concept of explanatory models (Kleinman 1980).

Explanatory models (EMs) of illness and disease illustrate the reality of social life, showing that lay explanations of illness are largely shaped outside the medical sphere. Personal understandings of illness and disease are not strictly constructed around biomedical concepts but are largely shaped by informal communication. This makes it imperative to study the social domains through which medical knowledge is examined. EMs emphasise the centrality of communication to practices and beliefs around illness and disease. Kleinman (1980) elucidated that the integration of different knowledge and experiences served, for lay people, as 'the clinical guides to decisions' (p. 107). As the management of personal health largely takes place

outside the medical-practitioner context, a formalistic biomedical understanding of illness and disease can thus only offer a rudimentary picture (Kleinman, Eisenberg & Good, 1978).

Lay EMs of CVD have received little attention in the Malaysian context. However, research on lay models of heart-related illness in rural Indonesia has shown these understandings to be embedded within a sociocultural context, overlapping with and diverging from formal medical concepts (Norris, Allotey & Barrett 2010). This has implications in a number of areas. Inquiry into EMs can assist in looking at the effectiveness and efficiency of health strategies and provide the potential to improve communication around illness and disease.

A further benefit of investigating EMs is that they can help to explain disparities in health outcomes across different social categories. This is particularly relevant in relation to gender and ethnicity. Indeed, in this report – as is the case in much research of Malaysia – ethnicity was the unit of analysis. The impact of ethnicity on EMs in Malaysia has received little attention. Further, the effects of ethnicity on health-seeking behaviour remain unclear. A study on acute coronary syndrome suggested that therapeutic practices in Malaysia may differ across ethnic groups (Lu & Nordid 2013). However, one noteworthy study on a similarly prominent health issue was a qualitative study on cancer patients' illness explanations (Farooqui et al. 2011). Although it was hypothesised that ethnic and religious identity would be a major factor in how Muslim Malay participants viewed the causes of their disease, the results found religion to be insignificant to causal explanations. Lifestyle and hereditary factors, by contrast, featured prominently in causal explanations.

Research for this report was conducted within the district of Segamat, Johor. Segamat has a population of 182,985 people and covers an area of 2851.26 km^2 (Saleh et al. 2013). The district contains a large population of children and elderly people with many inhabitants moving away when they enter the 20-45 year old age range (see figure 1) (SEACO 2013). 58% of the population report to being employed, 10% report to be in a state of unemployment and 25% report to carry out household duties (SEACO 2013). 20% of the population have reported

to at least experiencing a chronic health condition such as heart disease, diabetes or hypertension (SEACO 2013).

Figure 1: Age and sex population pyramid for SEACO
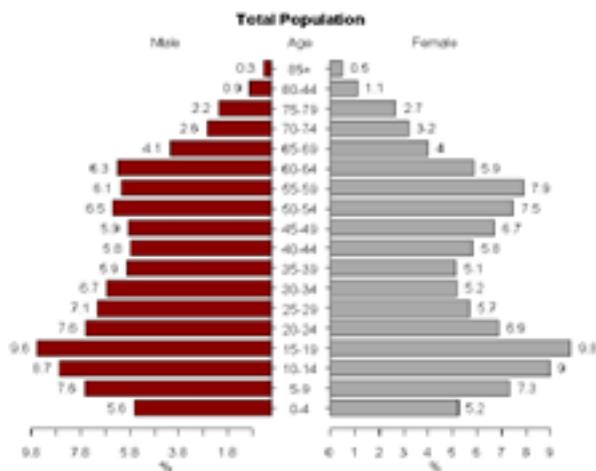
The research in this report was conducted through the South East Asia Community Observatory (SEACO) platform, in existence since 2011 (SEACO 2016). The SEACO Program describes itself as a 'health and demographic surveillance system' collaborating with the local community, universities and arms of government in furtherance of its various ongoing research projects (SEACO 2016).

The location of Segamat was chosen for this study due to the research team being granted access through a partnership between SEACO and Monash University. A key strength of undertaking this research with SEACO was that it would build upon pre-existing research and relationships. This research was conducted within a short time frame and being able to work with SEACO bolstered the integrity and quality of the research.

Method

To uncover and explore community perceptions of CVD held by different community members within Segamat, an ethnographic study design was employed. Individual interviews and focus groups were conducted in four community centres within the district to collect the data necessary for the study. Participants were chosen for either a focus group or interview based on which would enable them to share their knowledge and experience of CVD more effectively. The focus groups were sorted by the gender and self-identified ethnicity of each community member: Chinese, Indians and Malays. During the fieldwork component of the study, SEACO staff members acted as translators of both cultural and language differences. At times this involved communications in three different languages in just one focus group –

Mandarin or Tamil, Malay and English. This complicated the interview process but was managed by debriefs after each session and secondary translators being available when necessary.

Due to its qualitative nature, ethnographic field research not only provides a holistic and 'rich description' of its subject, but also contributes to the 'inquiry toward more meaningful explanations' (Sofaer 1999). This made it a particularly valuable method within this study as opposed to quantitative methods of inquiry, which would not provide the same complexity and depth of data.

Initially, questions of a broad nature were asked, such as 'What can you tell us about issues with the heart and blood flow?' Further into the fieldwork, more specific questions were asked, such as:

What is high cholesterol? What causes it? Where would you go to treat it?

Body mapping and word piling - techniques that are informed by the Participatory Rural Appraisal (PRA) approach - were also used during focus groups. These approaches assisted in the formation of an informal and relaxed atmosphere in the groups. They were essential to the effective gathering of interviewee knowledge of CVD both visually and concisely through body mapping and word piling respectively (Gastaldo et al. 2012).

The participatory research approach which includes the above techniques and the broad-to-specific line of questioning was used due to its capacity to build knowledge from the participant's perspectives rather than forcing modes of understanding that researchers may hold onto participants (Desai & Potter 2016). This approach not only empowers participants to express their perspectives without constraint and values those expressions, it also enables researchers to identify what cultural, socioeconomic and other factors are influencing community behaviour and perspectives (Desai & Potter 2016). Overall, this approach was well received; however, at times it seemed that the lack of direction from interviewers was confusing- this was likely exacerbated by language and literacy barriers. In these cases, body maps and word piles assisted in opening up discussions that researchers could then continue in a more traditional question-and-answer interview style to provide more structure for participants.

Data Analysis

Data collected during the fieldwork included body maps, word piles, photographs, audio recordings, audio-visual recordings and field notes. Debriefing sessions were held each day after data collection to draw out the major themes and concepts that arose during the sessions. SEACO staff and translators were included within the debrief sessions to ensure the integrity of the collected data was maintained. These sessions also enabled researchers to change their interviewing techniques and direction in preparation for the next day, based on what was and was not successful during the days' interviews.

After the initial data collection, mind maps and matrices were used to code data and identify key themes. The data was also compared with theoretical understandings of CVD and explanatory models that were gathered during the preliminary research for this project in order to elucidate connections and themes. Finally, the findings and the discussion drawn from them were presented publicly and can be found in the remaining portion of this report.

Ethical considerations

This study was approved by the Monash Research Ethics Committee. Some of the ethical considerations addressed during the course of the field work included gaining participant permission for the interviews and photographs, ensuring the confidentiality of participants and avoiding doing harm to anyone involved in the study which included allowing participants to leave or not answer questions when desired. The beneficiality of the study was also an important ethical consideration which was resolved through the inclusion of a direct benefit for participants through reimbursement. Furthermore, there is an indirect benefit of drawing out data that may assist with future health policy and healthcare delivery systems in the area. These are a few of the many ethical considerations navigated throughout the course of fieldwork, the data analysis and the presentations of findings.

Findings: Causes and Preventions

This section will outline the key findings of the local understandings of the causes and preventions of CVD within Segamat. Whilst other areas such as treatment and healthcare experiences of CVD were discussed during the data collection, the causes and preventions were often where participants had the most knowledge and enthusiasm for discussion. Furthermore, the causes and preventions illuminate most clearly the hybrid understandings that participants had of the workings of CVD including biomedical and lay explanatory models.

Blood quality

Blood quality and blood flow played a major role in how all participants explained the causes and preventions of CVD. When asked to describe the causes of cardiovascular disease, participants frequently discussed deteriorations in the quality of blood. Participants generally explained CVD as having blood of poor quality which in turn affected the function of organs such as the heart. Along with many other participants, one older Indian man called Raj spoke about 'thick' and 'concentrated' blood, as well as nerves 'clogged' by oil, as causes of heart and blood flow problems. He explained that medication is taken to reduce these issues of blood quality and to dilute their blood. Other participants discussed blood 'boiling' (i.e. being too hot) or blood being too cold as a cause and/or symptom of CVD. The role of menstrual flow in keeping the blood 'healthy' was also mentioned by some Indian women and men. They suggested that menopause was a cause of heart problems because when the menstrual cycle ceases one can no longer 'rid bad blood from the system'. The importance of menstrual flow was highlighted when participants stated 'after menopause is the only time these illnesses [CVD] can be experienced'. The Indian group was the only group in which menopause was seen as a cause of CVD. However, it again suggests the significant impact of blood quality on heart and blood flow problems which predominated the focus group discussions.

Due to the way in which poor blood flow and quality were generally perceived as causes of CVD, the correction of these attributes was often considered key to the effective treatment of CVD. Many participants described the importance of treating blood through cleaning, cleansing and detoxing processes. For example, one Chinese man spoke about massages,

soaking the feet in hot water and acupuncture as practises that could assist with blood flow. Another Chinese man spoke about the importance of Chinese massage to treat issues related to the blood flow when, he said pointing to his chest, 'it's stuck here'. In addition to this, one Malay man employed Japanese traditional medicine to filter bad blood from his body with clear adhesive foot strips. Some Malay women also said that having their kidneys cleaned helped to improve blood flow. Although these examples describe various methods of treatment, each method aims to treat the blood by filtering, detoxing and cleaning the blood, thus suggesting the importance of the cleanliness or purity of the blood in preventing CVD.

The story of two urban Chinese women, Ping and Ling, highlights another important preventative method discussed by various participants; that is the temperature of the blood and body. These women explained that they used thermal massage beds as a form of treatment and as a preventative measure for heart problems. They used the thermal beds to relax and to warm up the body and blood. The women said that having a warm body allows the blood to flow around the body correctly, and that they could feel this correct blood movement during/after using the thermal beds. Ping and Ling associated a cold body with sickness, in particular cancer. For example, they suggested that sitting in an air-conditioned room for a long time will increase a person's likelihood of getting cancer (this was also mentioned by a number of other participants). When asked if cancer was linked to the heart, the women said that every part of the body was related to the heart because blood flows throughout the body, including in the heart. While the women mentioned the traditional medicine they used often, they assured me that whenever they were worried about their health or had serious medical issues they would go to the clinic or hospital. Ultimately, Ping and Ling's descriptions highlight the importance of body and blood temperature to the maintenance of cardiovascular health and health more broadly.

Whilst most participants had much to say about the role of blood quality in causing and preventing CVD, the Indian women were generally an exception to this rule. These women tended to lack an awareness of preventative measures and seemed to have little understanding of the disease in general. However, they did discuss the importance of having 'correct' blood flow, the importance of treatment that might correct blood flow and the 'detoxing property' of the heart in this correction process. The prevalence of stories such as these, even amongst those

like the Indian women who are less willing or able to share knowledge, indicate that whilst there is much diversity in how the relationship between blood flow and CVD is perceived, blood quality and flow are understood as essential to the causes and prevention of CVD.

Diet

Although diet was mentioned by every group as a cause of heart and blood flow problems each participant had a different idea as to how and what kinds of dietary habits caused CVD. For instance, oily foods were often brought up as something that caused thickening of the blood, high cholesterol (which one Indian lady defined as 'fat mixed with the blood') or clots in different areas of the body including heart, head and limbs. Sweet foods were also occasionally mentioned as a cause particularly as a cause of diabetes. Some participants, including an Indian woman, Mary, also suggested that a cause of CVD is eating at night and that high cholesterol can be avoided by eating only one big meal a day. Furthermore, Indian and Malay participants stressed that the increased ubiquity of fast food has increased the risk of CVD. It was mentioned that young people now are more likely to develop CVD as they consume less home-cooked meals. Although, as has been demonstrated, there was a diversity of opinions about the relationship between CVD and diet suggested by participants, it seemed that this was considered an important factor for each group.

Food and eating habits were identified not only as key causes of CVD but also as important to the prevention the disease. One Indian man talked about the way that oily foods cause high cholesterol whilst spicy food, in particular the soup Rasam, could be eaten to flush out the high cholesterol. In addition to this, many of the Malay women discussed the role of fats that could solidify in one's blood and lead to the closing of blood vessels, jamming the flow of blood to heart. Thus they suggested it was important to avoid fatty foods to prevent CVD.

Lack of Exercise

At least one person in every interview or focus group mentioned the importance of exercise either for their general health, or more specifically to push the blood around the body and to reduce heart attack. When talking about exercise, two Indian men discussed how sweating while walking, the inability to walk long distances, being overweight and heavy breathing were causes/signs of CVD. A few people mentioned exercise activities that they were involved in to prevent CVD such as a large number of the urban Chinese women who said that they participated in Tai Chi to prevent heart or any other health problems. Most of the time exercise was mentioned but not elaborated on by participants in the groups.

Stress

Stress was mentioned by every group as a leading cause of heart and blood flow problems. It was found that across all ethnicities, but especially with the Indian and Chinese, men tended to be most stressed about work. In contrast with this, it was said that women regarded family as the most stressful part of their lives and therefore most likely to cause heart problems. One Indian woman said that because she was single and had no children she was not stressed whereas another Indian woman said 'I am stressed because my youngest child hasn't been married yet'. On a similar note, two Chinese men suggested that males were more prone to developing CVD more than women because they 'use their brain more'. Although stress was often considered a cause of CVD, most people did not discuss how they prevented stress to avoid CVD in their everyday lives. This apparent discrepancy between attitude and behaviour could be an interesting avenue for future research.

Smoking

There were diverse opinions expressed about whether smoking was irrelevant, a cause or potentially even a treatment for CVD. Whilst one Malay woman said that heart disease 'affects men more because of smoking' thus directly linking smoking and heart disease, another woman of Chinese background suggested that smoking actually prevented heart problems: her 'father passed away in his 70s, smoking till the day he died, if he stopped he may have died

earlier'. A third opinion was expressed by a Chinese man, Ng, who had experienced stroke and was keen to discuss his smoking habits. He said that he started smoking when he was 12 years old and showed researchers his cigarette tin and the cigarettes that he rolls himself. However, when asked whether he thought that smoking was related to his stroke he laughed and said no. Indifference towards smoking as a cause was common and sometimes the topic of smoking was not even brought up by participants during the focus groups. Other relationships drawn between smoking and CVD include those drawn by the story of a Malay participant who explained that smoking caused instability in the blood, which lead to high cholesterol within the body. Smoking and its role in CVD and health problems more generally was clearly an area of contention for the participants, which contrasts with biomedical understandings of this relationship.

Age

Most participants associated CVD with people in their advanced years. Malay participants explained this by suggesting that people develop a more sedentary lifestyle as they age which has the effect of weakening their blood flow. In particular, one Malay woman explained that old men had a higher chance developing CVD than older women because the women continue to carry out domestic labour. As has been discussed, menopause was also connected with increased risk of heart and blood flow problems by various Indian participants. Despite some participants perception that CVD was becoming increasingly common in younger people most, if not all, agreed that it was more common in older people.

Other Causes

There were a number of other causes of CVD discussed by only a few individuals that are worth mentioning here. Genetics was mentioned as a cause by some participants. For instance, one Indian woman who was not comfortable discussing her husband's 'heart disease' believed that heart related problems are inherited. She mentioned that his grandmother had also had heart problems. Weather and time of day also arose as a contributing factor to CVD. As

has been mentioned, the cooling effect of air-conditioning on the body was seen as a risk factor to CVD. Malay participants especially emphasised body temperature as having a causal connection to the development of CVD. A Malay man mentioned that sweat could even ameliorate the damage caused by smoking because it 'takes out the dirt' incurred from inhaling cigarette smoke. Finally, blood vessel damage, 'hardened walls' of blood vessels and bursting vessels in the brain were discussed by various participants as playing a role in CVD. Although these causes were often mentioned by more than one participant prompting their inclusion here, they were far less central in general discussions occurring around the causes of CVD.

Doctor check-ups

In many circumstances, community members across all ethnicities commenced scheduled check-ups at public clinics only when an initial trigger, such as a specific illness, caused them to initially seek out medical help. Malaysia's relatively accessible health care system plays a large role in community members continuing to attend check-ups.

Generally, participants seemed to consider doctors as essential to the prevention and treatment of CVD. They also viewed them as a primary source of knowledge of CVD. For instance, one Indian man spoke of his weekly checks of his cholesterol and blood pressure in order to prevent heart attack and stroke. Gordon, another Indian man who took great pride in discussing his own health, attended body and blood check-ups at both private and public clinics throughout the year. The Indian men constantly spoke about the importance of seeing a doctor if one has any health concerns and/or issues. In particular, they emphasised that doctors can help to make the 'blood flow better'. They also seemed to have a lot of trust in their doctors and would take the medicine prescribed to them. However, one Indian lady was sceptical of prescribed medicine and said that the cost of doctors, particularly specialists, often prevents her from getting treatment. A Malay woman also questioned doctors' advice and said that on one occasion she was administered the wrong medicine. However, generally Malay women and men trusted doctors and would go for regular check-ups particular concerning blood, although one Malay did express dissatisfaction with the way staff at the hospital in previous experiences would 'push you here and push you there' without explanation . Doctors were also highly

regarded by the Urban Chinese women; for example one woman stated that doctors are very informative and because she has a family history of heart disease and stroke, she has regular doctor check-ups. Finally, whilst the Indian women had very little knowledge around the causes or prevention of CVD, the main prevention they suggested was attending medical check-ups. A strong trust in medical practitioners was especially apparent when one Indian woman expressed no concern about the quality of local doctors despite attributing her asthma to a her former doctor's failure to control her medication, These stories illustrate the way in which the predominant attitude expressed by participants were that doctors played a key role in their understandings of and response to CVD.

Traditional and Other Treatments

Whilst there was a lot less discussion concerning traditional medicine than was originally anticipated, there were a number of people who mentioned traditional treatment methods. Some participants stated that they would choose traditional methods prior to seeing a western doctor, whilst others stated that they would only use traditional medicine as a 'last resort'. It is important to note that at times it was unclear which treatments had their roots in Chinese or other traditions and which were informed by popular culture, so although we are classifying these treatments as traditional for the purposes of this report, further research will be needed to justify the categorisation of these treatments as 'traditional'.

Stories of traditional treatments were encountered in each of the groups. Urban Chinese women discussed methods of preventing heart attack and stroke which included coughing to stimulate heart movement, as well as treating a stroke by pricking the person's ear lobes and fingers with a needle to release blood pressure in the body. The participants in these circumstances were informed of these preventative measures through Facebook posts suggesting that these are less traditional and more 'popular' forms of treatment. One Malay woman spoke about her husband who had a stroke the way in which her praying and wearing white often after this event actually assisted him in staying alive. This was one of the only instances in which spirituality was discussed as related to CVD which is an important point to follow up in future. In addition the rural Chinese women spoke about holding the back of your

neck in order to stop heart attack/stroke. Many of the Malay women said that they would first use traditional medicine and if these pursuits failed then they would go to the clinic or hospital.

Reflexology walks were particularly important to those in the Indian community for the prevention of CVD. Reflexology walks traditional treatments that are related to biomedical understandings as they signal peripheral neuropathy as caused by poor blood circulation; however, in these circumstances the walk is utilised through lay understandings. In this context the reflexology walk is used by community members to encourage blood flow throughout the body. A lack of pain in the feet when on the reflexology walk was described by participants as a signal of CVD as it indicates 'a lack of blood flow to the feet'.

Malay participants described the practice of 'blood filtering' as a preventative technique against CVD. The men use a Japanese traditional medical practice of applying clear adhesive strips to the soles of their feet each night before bed. The men described their belief that bad blood falls to the feet, and that the clear strips filter out bad blood. When the men awake in the morning, the strips are 'black because the strips have extracted the bad blood out'.

These are just some of the stories that were told about traditional treatments for CVD and indicate that not only do biomedical models taught by doctors inform local understandings of CVD but so too do traditional explanatory models.

Lack of preventative factors

Some participants, particularly older and generally healthy participants, had few concerns regarding their heart and blood health. They believed that because they hadn't been sick in the past it was unlikely that they would become sick in the future. Often older people were aware of the preventative measures such as eating well and exercise; however, didn't have any health concerns so admitted to eating as they wanted.

Discussion

Whilst we have discussed a number of causes and preventative measures of CVD in our findings, the most significant theme discussed by all participants was the idea of blood possessing both causal and preventive properties. This contrasts with biomedical models which, as previously mentioned, focus more on CVD's relationship with organs and blood vessels rather than the properties of blood itself. While these biomedical models do at times discuss 'blockages that prevent blood flowing' (WHO 2016), they do not highlight blood properties to the same depth and in the same way as the participants of this research did. The contrast that became apparent between biomedical and participants' causal explanations on this matter is reflective of differences in systems of knowledge. Understandings emphasising the quality of blood itself in relation to CVD indicate how EMs vary according to cultural context, revealing an interpretation of illness and disease obscured by the asocial nature of the biomedical EM.

In addition to this notion of blood quality, there were a number of other themes discussed amongst all the groups. These included the concept that diet and exercise are crucial in preventing heart disease. These build on the findings of Norris, Allotey and Barrett (2010) in their study of stroke in Indonesia. Common themes found in this study included the influence of diet, stress and thick and thin blood. Furthermore, most participants viewed CVD as a concern within their community and expressed a desire to further their understanding. This is a generally held view throughout the world as CVD is the number one cause of death globally (WHO, 2016). Currently community interactions with public health are constructed around biomedical understandings of CVD. Our study proposes that a hybrid of lay and biomedical understandings of CVD should be encouraged. This will increase community engagement with preventative measures for CVD.

Throughout the four days of fieldwork, a number of key differences also became apparent between the different focus groups. Some differences in understanding included the limited knowledge of CVD expressed by the female Indian participants, concerning both the prevention and causes of CVD. Analysis of the impacts of factors such as gender and ethnicity, however, should have regard the concept of intersectionality (Crenshaw 1989). This notion holds that a person's social reality is unable to be explained by any one identity (like ethnicity)

but is in fact informed by a number of simultaneous or overlapping identities. Thus, it is important to note that most of the women interviewed lacked higher education and were housewives. As such, their limited understandings may have stemmed from a number of overlapping identities including gender, ethnicity or educational identity. By contrast, there was generally a greater biomedical understanding amongst the urban and rural Chinese participants. In particular, the two young rural Chinese men had a much clearer anatomical understanding than other participants. Again, it is important to note that both young men were highly educated, therefore their understandings may not necessarily be shaped by their ethnicity or gender but rather by their level of education. These particular differences illustrate the way in which intersectionality shapes understandings of CVD. While there may be a number of contributing factors, the findings suggest that there is a relationship between understandings of CVD and gender and ethnicity. More research would be needed in order to more fully understand the relationship between ethnicity, gender and understandings of CVD.

This study has provided a brief overview of community understandings of CVD in Malaysia and gives scope for further, in-depth analysis of these understandings. Often community members understand the properties and quality of one's blood as contributing factors to CVD susceptibility. This is especially apparent in regards to causes of, and preventative measures against, CVD. Despite participants referring to blood as crucial to the causes and preventative measures against CVD, the relative time constraints of this study have limited our capacity to gain further insight into participants' understandings of the relationship between blood and CVD. Future research could provide insight into community understandings of the connection between organs, blood and CVD collectively and the interrelationships between the three.

This research has also provided insight and clarification into the distinctions between lay and biomedical community understandings of CVD in Malaysia. Kleinman argues that the most efficient medical interactions are derived from incorporating lay and biomedical understandings into medical practices (Kleinman 1978). By incorporating lay CVD understandings into a general scientific understanding of CVD, the gap between patient and physician knowledge can be bridged (Kleinman 1978). Furthermore, this would see a holistic approach to interpreting and teaching CVD knowledge, specifically concerning community

understandings of its causes and preventions (Shim 2005). By providing insight to health practitioners into how the community interprets CVD, communicational and practical barriers in medical interactions can be overcome. For instance, this is relevant to our finding that the majority of participants interpreted blood as either 'hot' or 'cold' and that treatments work to change the temperature of one's blood. By providing medical practitioners with lay understanding such as these, practitioners will be able to better explain, manage and treat CVD.

Research limitations

The methodological practices and scope of our study has been restricted due to limitations beyond our control. Initially these limitations included translation inconsistencies when we commenced our fieldwork. The line of questioning used during fieldwork changed over the four days of fieldwork as initially translators were using 'stroke' and 'CVD' as interchangeable terms. The relative time constraints of this study resulted in only four days of fieldwork being undertaken and limited time for data analysis. Additionally, the large majority of participants were over 45 years old and not working full time.

Conclusion

This report investigated local understandings of CVD in Segamat, Malaysia. It found a hybridity of lay and biomedical interpretations of this disease. Blood qualities were found to be a crucial component to participants' interpretation of CVD. A particularly notable feature of the findings was the parallel use of traditional and biomedical prevention and treatment methods employed by community members. This insight into community understandings should shape and influence practitioners' interactions with community members in the future. This has reaffirmed past studies into community understandings of CVD and gives scope for research of CVD in future.

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