Community-Based Study of Mental Health in a Post Conflict Situation in Maluku, Indonesia

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LIST OF PAPERS

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Summary

In 2010, the number of refugees and internally displaced persons (IDPs) throughout the world was more than 37 million, although this number had decreased since its peak in 1994 (IDMC, 2008). Most of these forced migrations were rooted in violent conflicts throughout the world, including Indonesia. Studies of mental health in post conflict situations have revealed detrimental impacts of war and violence among both refugees and IDPs (De Jong, 2002; Porter & Haslam, 2005). However, there are few longitudinal studies of mental health of IDPs in low- and middle-income countries, especially in Indonesia.

In Indonesia, the incidence of persons displaced by religious and ethnic conflict increased substantially after the fall of the Suharto regime in 1998. The conflict began in Ambon city during Idul Fitri, the most important Muslim holiday. The day ended with violence throughout the city, which involved killing, physical assaults, and the burning of houses and holy places in both Christian and Muslim communities. Hundreds of people lost their homes that day and became IDPs. Unfortunately, this was the beginning of a long conflict and forced migration disaster in Ambon Island and across Indonesia (Kompas Cyber Media, 1999).

Later conflicts started in other areas of Indonesia, leading to war between different religious and ethnic groups and more forced migration. Conflicts and forced migration happened everywhere—from Irian Jaya/Papua in the eastern part of the country to Aceh in the western part—but all conflicts remained localized to those particular areas. The conflicts and wars in Indonesia created a large number of IDPs, and the number continued to increase. By December 2002, the number of IDPs was 1,421,674, with an additional 70,000 refugees from East Timor (Ministry of Manpower, 2000). At the end of 2004, estimates of the number of IDPs ranged from 342,000 to 600,000 (Komnas HAM, 2005). Because of the

lack of a systematic monitoring system and difficulties in defining what constitutes an IDP, the current number of IDPs is difficult to estimate. However, a rough approximation compiled from various sources is around 200,000 (IDMC, 2008).

A previous study on the time perspective and mental health among IDPs in Indonesia was conducted in mid-2003 (Turnip, 2004). That study indicated that forced migration had created profound and sudden changes that affected the IDPs, their family life, and their social dynamics. Many went through traumatic experiences before, during, and after migration. They witnessed, and were victimized by, life-threatening situations and did not receive sufficient assistance to help with mental health recovery. They also had little confidence in their safety and security in their new places of residence, and these feelings were mixed with anxiety and fear that violence could erupt again at anytime.

During the conflict period, the IDPs lost most of their material resources, including their income sources; regardless of their previous living conditions, many IDPs now live in deprivation and poverty. The inability to guarantee fulfillment of a family's basic needs often triggers feelings of insecurity and can lead to many psychological problems. IDPs consider the availability of a steady family income one of the most important prerequisites for their psychological well-being. IDPs live in poverty as a consequence of forced migration, which makes them even more vulnerable to mental distress.

This was a community-based longitudinal study of the mental health of IDPs affected by violent conflict in Ambon Island, Indonesia. Our objective was to investigate the influence of interwoven factors on the mental health of IDPs in post conflict situations in a low-income country, namely, Indonesia (Indonesia was still classified as a low-income country when this study took place). The variables studied included the traumatic events experienced during the violent conflict, post conflict living conditions immediately after the forced migration

(daily life, housing, employment, education, and health), and living conditions since peace was restored. The study focused on assessing the prevalence of mental health problems, such as psychological distress and associated factors, and identifying the factors protective against psychological distress and supportive of positive mental health among people living in Maluku. The investigation was expanded to people living in the affected areas but who were not IDPs, in order to evaluate differences in mental health between those who were affected directly and indirectly by the conflict. The research methods used in the study were developed based on theories of the mental health of displaced persons and my own experiences working with displaced communities in Indonesia. We incorporated a community participation method by actively involving the IDP communities in most of our activities during fieldwork.

We hypothesized that the situation of IDPs in Ambon Island would not be as gloomy as many studies of displaced persons have found in other locations (Hollifield et al, 2002; Porter & Haslam, 2005). Our main findings showed a high prevalence of mental distress, especially among women and those who were exposed directly to the violent conflict. The researcher also found that risk factors for distress were related to socioeconomic status, distance from the epicenter of the conflict, and the IDP's gender—results that are consistent with those of previous studies. However, the researcher also found protective factors for resilience and positive mental health among these IDPs, such as hope for a better future and the belief that one's life has meaning. These findings have given us a more complete and multifaceted understanding of IDPs' lives in low- and middle-income countries, and may contribute to the development of emerging theories of the mental health of displaced persons.

1. INTRODUCTION

The impact of disasters such as violent conflicts on individuals and communities can be extensive and varied, and can last for a long time (Alexander et al, 2005). Fortunately, not all effects are negative, because positive outcomes too may derive from extreme adversity (Beiser et al, 2004). The mental health response to disaster is important for the health of the population, and evidence-based findings are needed to produce knowledge in this field. However, only a small number of longitudinal studies on mental health responses to disaster have been conducted among IDPs in low- and middle-income countries, despite the large number of disasters in such countries (Porter & Haslam, 2005; Westermeyer, 1985).In the context of the forced migration situation in Indonesia, IDPs comprise a group that is vulnerable to many disadvantages in life. The experience of being uprooted and the harsh daily living conditions caused by forced migration are likely to affect IDPs' psychological condition. In addition, recent IDPs usually do not have any livelihood and live in poverty after their migration from their habitual residence (Saraceno et al, 1997). The poverty resulting from migration predisposes a person to mental health problems (Saraceno et al, 1997; Patel et al, 2003; Murali & Oyebode, 2004). IDPs are also at increased risk of exposure to additional trauma and may develop mental health or psychiatric problems because of their experiences of catastrophic trauma and negative life events (Porter & Haslam, 2005;Thapa & Hauff, 2005).

In this study, the researcher focused on the mental health and well-being of IDPs in deprived living conditions. The researcher studied the mental health problems in this community related to the violent conflict that precipitated their forced migration, and the community's resilience. Our intention was to present a more thorough description of both psychological distress and positive mental health, and their associated factors, through a

longitudinal study. It is increasingly important to study the well-being of IDPs in order to develop adequate intervention programs to promote their health; however, there is very limited information about this community. More knowledge is needed in order to tailor interventions according to the needs of individual IDPs and of their community. To our knowledge, no comprehensive study has been conducted to investigate mental health and well-being among IDPs in Indonesia.

One of our focuses was to study positive mental health among IDPs. Positive mental health refers to positive manifestations of one's psychological capacity, rather than being just the absenceof mental illness (Jahoda, 1998; Seligman & Csikszentmihalyi, 2000; Vaillant, 2003). However, the most common positive mental health outcome studied in previous research on forced migrants was merely the absence or reduction of mental distress. Previous studies confirmed that, despite a high prevalence of mental distress among refugees and IDPs, they appeared to function in daily life (Steel et al, 2009; Cardozo-Lopez et al, 2004; Chung & Kagawa-Singer, 1998). This highlighted the need to understand IDPs' mental health in a more comprehensive way, by exploring positive mental health and not focusing only on distress.

The researcher was particularly interested in developing a culturally appropriate set of poverty indicators. Poverty is one of the main global threats to health. However, little is known about the impact of poverty on psychological distress in IDPs living in low-income countries. Poverty entails more than having a low income or low consumption; it is a form of deprivation (Saraceno & Barbui, 1997). Therefore, poverty should be viewed as a multidimensional phenomenon that encompasses the inability to satisfy basic needs, lack of control over resources, lack of education, and poor health (Murali & Oyebode, 2004). Some studies have reported contradictory results about the impact of poverty on mental health

and well-being. One paper in *The Lancet* Series on Global Mental Health indicated that not all studies in mental health and poverty report a link between the two variables (Saxena et al, 2007).

Various indicators of poverty are used in different settings, such as life expectancy, literacy, education, and standard of living (UNDP, 2006). Comprehensive indicators of poverty include population and social indicators, such as public expenditure, net primary school enrollment rate, access to safe water, immunization rate, life expectancy at birth, and mortality (Worldbank.org). However, the most commonly used tools to measure poverty are income or consumption indices, unemployment, and educational level.

There is a relative element in defining poverty appropriately for different local contexts, whereby a person is considered poor if his or her consumption or income level falls below some minimum level deemed necessary to meet basic needs. This minimum level is usually called the "poverty line". What is necessary to satisfy basic needs varies over time and between societies. Therefore, poverty lines vary in time and place, and each country uses a poverty line appropriate to its level of development, societal norms, and values (Worldbank.org). In this study, it was important, firstly, to find contextually valid indicators of poverty for the study setting, namely, IDP communities in Ambon Island. The researcher then developed a questionnaire to measure socioeconomic levels based on these tailored poverty indicators.

In this study, the researcher investigated the relationship between subjective well-being and mental health and changes in living conditions using a longitudinal study design. It was particularly important to examine the relationship among various health parameters, including mental health, in different contexts and to improve the theoretical models of this relationship in the hope of improving the basis for interventions. The researcher also

investigated the impact of changes in an individual's poverty level. Few longitudinal studies have examined the relationship between poverty and mental health in low-income countries, and the researcher was unable to identify any study of this relationship in displaced communities.

1.1. Maluku province: The study setting

Indonesia is located near the equator. It is an archipelago country comprising more than 13,000 islands that stretch between the continents of Asia and Australia. Indonesia's area is about 1.9 million km^2, and it has a population of about 237 million (Indonesia Statistical Body, 2008), making it the fourth most populous country in the world. The major religion is Islam, which is practiced by 87% of the population (Indonesia Statistical Body, 2008), and Indonesia has the largest Muslim population in the world. However, in Maluku, the balance of religious affiliations is different: 51% are Christian and 49% are Muslim (Ambon Statistical Body, 2008).

The setting of this study is Maluku province in Indonesia. The researcher included three islands in the province: Ambon, Saparua, and Buru. The researcher selected one village each in Buru and Saparua Islands that had not been the site of violence related to the religious conflict affecting Maluku province. Ambon Island was selected for comparison, because it was the epicenter of the violence. The province has been the scene of Muslim–Christian violence in recent years. The conflict, which began in January 1999, spread from Ambon city. The internal violence and war lasted for more than six years and was perceived by the communities in Maluku to be a religious conflict between Christians and Muslims (Kompas Cyber Media, 1999–2005). The latest major incident occurred in April 2004, but

smaller incidents flared up sporadically throughout the province until 2006 (Kompas Cyber Media, 2004–2006).

Ambon city is located on Ambon Island, one of 559 islands in the Maluku archipelago, also known as the Spice Islands. In 2000, the province had a population of about 1,200,000 within a land area of 54,185km^2. The province has territorial waters of 527,191 km^2, making a total area of 581,376 km^2. The province is located in eastern Indonesia, between Sulawesi and the island of New Guinea (between 2°30'and 9°S, and 124 and 136°E). By 2006, the population had grown to almost 1.4 million, with a rate of population growth of 0.91 (Ambon Statistical Body, 2008). The major income source for inhabitants of Maluku is farming (60%).

In 2002, the most recent data then available, estimated the IDP population in Ambon city alone at 170,590 persons (Ambon Statistical Body, 2003). The IDPs lived in camps and relocation areas in Ambon Island, and a smaller number had returned to their villages (Statistic of LAPPAN, 2005). The number of fatalities during the six years of intense violence was estimated at around 10,000, and 500,000 persons displaced from their houses and lands (Kompas Cyber Media, 1999–2005; Ambon Statistical Body, 2003& 2005). The damage was very severe, making Maluku one of the least developed provinces in Indonesia in recent years (Ambon Statistical Body, 2003). Half of the population lost their jobs. The provincial government predicts that the material damage exceeded 311 billion rupiah (equal to US$40 million), not including damage to the private sector. More than 28,000 houses and 167 holy sites were destroyed in both Christian and Muslim communities. Schooling became sporadic when the situation worsened, and more than 80 school buildings were destroyed.

People in Ambon Island have lived in sections divided by religion since the conflict began. The borders between Muslim- and Christian-majority sections were guarded by the Indonesian military (Kompas Cyber Media, 2000). People were forced to move house

according to their religion, and if they refused, they risked being killed or burned in their homes. Many IDPs moved from their homes before actually being attacked, knowing that they lived in an area where the other religion formed a majority and were thus under threat.

People in Maluku have been described as strongly devoted to their culture and values. They live according to their belief systems, which regulate the role of every society member according to gender, age, and social position (Peacock, 1973; Koning et al, 2000). In this culture, it is very important to act according to social expectation; otherwise, social punishment may result. A man usually serves as the head of the household. This position empowers him to set the rules for the family, receive preferential treatment over everybody else living in the house (regarding clothes, food, etc.), and be obeyed by others. In return, he is responsible for providing for the family's needs, and therefore he is more often the breadwinner. The woman's role in the house is usually to take care of domestic issues, raise the children, and deal with problems at school (Koning et al, 2000).

Older people are treated with great respect and are cared for by their children or younger relatives. Younger males are expected to pursue education and jobs to prepare themselves for the future. Younger females have only recently been expected to pursue education, because traditionally they occupied the lowest social stratum, and were not expected to generate income independently in their adult lives.

1.2.Global conditions of IDPs

Internally displaced persons are "persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalised

violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognised State border" (Guiding Principles on Internal Displacement, Introduction of United Nations, 1998). The two most important components of the definition in the Guiding Principles are:

1. the fact that the victims have not crossed an international state border, and
2. the element of coerced or forced movement.

Countries affected by internal displacement sometimes develop national IDP legislation or decrees defining who is entitled to special assistance and protection by the state. Such persons may be granted emergency assistance in the form of food rations, immediate access to health care, and temporary shelter.

The global number of IDPs began to soar in the 1990s. By 1995, the number of IDPs was estimated to be 20–25 million in more than 40 countries, nearly double the number of refugees (IDMC, 2008). In the year 2010, IDMC estimated that there were 27.5 million IDPs in more than 50 countries (IDMC, 2010).

Africa is the most affected continent, with 11.1 million IDPs in 21 countries. The countries with highest IDP populations in 2010 were Sudan (4.5–5.2 million), Colombia (3.6–5.2 million), and Iraq (2.8 million). Nearly half of the IDPs are estimated to experience lack of humanitarian support from their governments, and millions face resistance by their own governments to fulfilling their IDP protection obligations (IDMC, 2011).

Most IDPs are displaced because of internal armed conflicts, and there are serious protection concerns especially for vulnerable groups, such as women and children. IDPs generally live in camps or relocation areas with poor living conditions. They usually do not have access to work opportunities, health care, and education, and they must either practice

self-reliance or seek aid from the host population, whose resources may be strained (Norris et al, 2006).

1.3. IDPs in Indonesia

The history of forced internal migratiom in Indonesia started during Dutch colonialism. In 1905, the Dutch government in Indonesia tried to send the excess population in Java to less populated outer islands (Peacock, 1973). This became the beginning of the large-scale population movements, best known as transmigration, that were part of Indonesia's first five-year national development program, started in 1950 (Marr, 1990). The program offered packages to attract people to participate. In theory, participants received two hectares of land, a house, and the basic necessities, which enabled them to build new, more prosperous lives in settlements with schools, health care facilities, and access to markets (Ministry of Transmigration and Population, 1999).The transmigration program moved a total of more than 6 million people, mainly from Java to other parts of Indonesia, during the period 1950–1999 (Ministry of Transmigration and Population, 1999).

There were many criticisms of the transmigration program, including protest against the following aspects: uprooting people from their cultures; the destruction of indigenous host populations, deforestation, and environmental havoc in the outer islands; and an increased incidence of conflict because of friction between the newcomers and the host populations. Another criticism was the involuntary basis of the movement: although the Indonesian government claimed that participation in the program was voluntary, there were many indications that people were forced to join. These included poor people in some of the larger cities who were forced to transmigrate, political prisoners who were sent into remote

transmigration areas, and people whose villages were on the proposed development site of the gigantic dam funded by the World Bank (Marr, 1990).The transmigration program has also served as a solution for relocating displaced populations who are unable to return to their original residences, and it is still offered to communities affected by natural and human-made disasters.

In Indonesia, the IDP definition is in accordance with that of the United Nations, with an emphasis on:

1. having to flee from one's own house or place of habitual residence,
2. the element of forced movement, and
3. possibly, though not necessarily, having to leave the area of one's original village/district/province (Indonesian Ministry of Manpower and Transmigration, 2000).

In 2008, there were about 200,000 IDPs in Indonesia. Aceh province hosted almost all of the IDPs, although relocation and resettlement are still occurring among many IDP population centers in Indonesia (Indonesia Statistical Body, 2007).

In recent years, some natural and industrial disasters have caused internal displacements. One vast natural catastrophe was the tsunami that hit several Asian countries at the end of 2004; Aceh was one of the worst hit areas. The number of fatalities was more than 100,000; more than 100,000 others were missing; and more than 600,000 persons were displaced (Ministry of Health, 2005). Aceh, especially the northern part, was devastated, and the coastline was permanently changed. The government founded the Agency of Reconstruction and Rehabilitation (BRR) in Aceh to coordinate the rebuilding process. This agency had a mandate to work for four years to rebuild Aceh and return it to its normal condition, and to help all IDPs to return to their houses. At the end of its term in April 2009, the BRR had left many unfinished tasks, despite massive funding (KompasCyber Media,

2009). The agency built 140,000 houses, thousands of kilometers of new roads, 12 airports, 20 harbors, and thousands of schools, health care facilities, and provincial and district administrative buildings in Aceh and in Nias. However, despite the BRR's goal of promoting well-being and dignity for the people of Aceh and Nias, it did not initiate activities besides rebuilding physical facilities (Kompas Cyber Media, 2009). BRR also faced criticism on the poor quality of the buildings, for which it blamed contractors (Kompas Cyber Media, 2009).

Flooding in various places in Indonesia—and the latest large flood, similar to a "little tsunami", caused by a broken dam in Jakarta—has been making headlines in the news. The broken dam displaced hundreds of households and devastated large residential areas (Kompas Cyber Media, 2009). An industrial disaster in Sidoarjo, East Java, called the Lapindo mudflow, affected 30 hectares of land. The disaster occurred when mud emerged from the earth, allegedly because of errors made by the energy exploration company Lapindo. The incident started when the company drilled a gas well in Sidoarjo, and miscalculation of the depth needed for drilling led to a massive release of mud at the surface. The company tried several methods to stop the mud, to no avail. At this time, the mud has covered more than 10,000 houses and thousands of public facilities, and has displaced more than 11,000 persons. The number of IDPs might continue to increase, because Lapindo has not been able to stop the mudflow permanently (Kompas cyber media, 2007–2009).

Although the government of Indonesia and several international non governmental organizations (NGOs) operating in Indonesia have implemented the Guiding Principles on Internal Displacement, IDPs in Indonesia still face many problems. Housing conditions are a major problem among IDPs who survived the 2004 tsunami in Aceh and Nias. Many IDPs still live in temporary shelters, and hundreds of IDPs still live in camps in Aceh, despite the massive number of new houses built there (KompasCyber Media, 2008). People displaced by

the Lapindo mudflow are still waiting for the compensation promised by Lapindo. The government of Indonesia has not been able to force the company to speed up the compensation process (www.indonesia.go.id, 2008).

In addition to these more recent IDPs because of natural and human-made catastrophes, Indonesia is still struggling with its former cohorts of conflict-affected IDPs, who numbered about 200,000 in 2010 (IDMC, 2011). In 2010, more than10 years after first being displaced, post conflict IDPs in almost all of Indonesia's former hotspots continued to suffer the consequences of their displacement. They still did not enjoy basic rights because of the following factors: economic, social, and political segregation mechanisms; inadequate material and social assistance; and unaddressed land and property issues (IDMC, 2011). In addition, the definition of post conflict IDPs should be broadened to include more categories, because the experience of displacement will not end merely through superficial measures that may remove persons from the ambit of the (narrow) formal definition of IDPs but do not renormalize their lives. The extended categories of IDPs proposed are:

1. IDPs who continue to live in camps or informal settlements with little or no access to basic services, who cannot buy the land they are living on (Central Sulawesi, West Timor);

2. IDPs who have been resettled in collective sites far from urban areas, with poor access to markets, health services, and education, and no access to agricultural land (West Kalimantan, West Timor, Maluku, and Central Sulawesi); and

3. IDPs who have returned to their homes but who have not been able to reclaim their property or livelihoods (Aceh, Central Sulawesi, West and Central Kalimantan, and Maluku) (IDMC, 2008).

1.4. Mental health of IDPs

Previous studies showed that the prevalence of psychiatric disorders among forced migrants, such as refugees and IDPs, is high compared with the general population. Severe and long-term psychological after-effects have been documented among forced migrants (Garcia-Peltoniemi, 1991; Kinzie, 1993). Some of the most commonly addressed and observed mental health problems among both IDPs and refugees are posttraumatic stress disorder (PTSD), depression, anxiety, and stress-related psychological and psychosomatic symptoms (Steel et al, 2009; Hollifield et al, 2002; Porter & Haslam, 2005; Norris et al, 2006). Refugees are populations at risk because of their exposure to events that detrimentally affect their mental health through both traumatization in the past and the hardship of their present situation in exile (Lavik et al, 1996; Hauff & Vaglum, 1993).In post disaster situations, one might expect that the risk factors attributed to conflict would lead to extremely high values for disability-adjusted life years compared with other areas (De Jong, 2002).

Displaced children may have risk factors for mental health problems arising from their parents (e.g., PTSD in a parent, maternal depression, helplessness), the children themselves (e.g., number of traumatic events, physical health problems, older age), and environmental factors (e.g., number of transitions, poverty, cultural isolation) (Erol, Simsek, Oner & Munir, 2005; Stein, 2002). Refugee and migrant children are likely to be exposed to many of the risk factors for emotional and behavioral problems, including trauma, loss, change, and social exclusion because of prejudice (Beiser et al, 1999).

Although there are fewer studies of mental health in IDPs than in refugees, IDPs have been identified as a group with worse scores on mental health indices compared with refugees (Porter & Haslam, 2005). A possible explanation is that most studies on refugees were conducted in high-income resettlement countries, which provided for more of the

basic needs of the refugees. Among IDPs, depression and anxiety are the most commonly observed psychological problems (Porter & Haslam, 2005). Studies of IDPs in low-income countries have reported a 40–80% prevalence of depression and anxiety, and a 28–60% prevalence of PTSD (De Jong et al, 2002; Cardozo-Lopez et al, 2004; Thapa & Hauff, 2005).

Different risk factors for distress among IDPs and refugees in low-income countries have been reported by different community-based studies. Gender differences in the prevalence of depression and anxiety are apparent in most studies, which show that women are more vulnerable to distress (Cardozo-Lopez et al, 2004; Thapa & Hauff, 2005). Older age and the loss of family and property were identified as risk factors for psychological distress among displaced communities in Bosnia and Herzegovina (Carballo et al, 2004). For Bhutanese refugees and Nepalese IDPs in Nepal, age between 31 and 40 years was a risk factor for anxiety, together with higher education, greater loss of status, and greater number of traumatic events (Thapa & Hauff, 2005). Among Karenni refugees in Thailand, the risk factors for poorer mental health were insufficient food, a greater number of trauma events, previous mental illness, and landmine injuries (Cardozo-Lopez , 2004).

1.4.1. Psychological distress in populations in low-and middle-income countries

Mental health has been increasingly accepted as an important public health issue during the past two decades (WHO, 2001; Collins et al, 2011). Mental and behavioral disorders are regarded as common and universal (although shaped by culture), affecting people in all countries regardless of their social background, gender, age, socioeconomic status, or environment. Around 20% of all patients receiving help from primary health care officials have one or more mental disorders (WHO, 2001; 2008). However, the suffering caused by mental health problems extends to the family and community, leaving these

patients' families with economic, emotional, and physical burdens as well as the negative impact of stigma and discrimination (Collins, 2011). According to the World Health Organization (2001; 2008), depressive disorders are among the top 10 leading causes of disability-adjusted life years for all ages in general populations.

In 1990, mental and neurological disorders were estimated to account for 10% of the global burden of disease (WHO, 2001). This percentage increased in the past decades to 13% in 2008, which is higher than that for cardiovascular disease and cancer (WHO, 2001; Collins, 2011). Most mental disorders involve depression, alcohol and substance use disorders, and psychoses (Prince et al, 2007).The most common forms of psychological distress in the general population are depression and anxiety (Sandanger et al, 2004; Hollifield et al, 2002). About one-third of the world population suffers from these two forms of distress at some point during their lifetime (WHO, 2001). The magnitude of the mental health problem and its global effects have been identified by researchers, who in turn have urged the setting of priorities for future research to improve the lives of people with mental health problems (Collins, 2011).

According to the World Bank criteria, there are 153 low- and middle-income countries, where about 85% of the world's population lives (Jacob et al, 2007). Most of these countries allocate very few financial resources and have substantially inadequate personnel and infrastructure for mental health (Jacob et al, 2007). The burden of mental disorders is 7.9% and 14.5% of GDP for low-income and lower-middle-income countries, respectively (Saxena et al, 2007). The shortage of mental health personnel hinders treatment and care in low- and middle-income countries. Low-income countries have a median of 0.05 psychiatrists, 0.04 psychologists, and 0.16 psychiatric nurses per 100,000 population. The proportions of these professionals are about 200 times higher in high-income countries

(Saxena, 2007). In low-income countries, most individuals with severe mental disorders are left to cope as best they can; many are victimized for their illness and become the targets of stigma and discrimination (WHO, 2001; Saxena et al, 2007).

In Indonesia, the prevalence of severe mental disorders, such as schizophrenia, was 4.6% for those aged 15 years or older (Ministry of Health, 2008). The prevalence of mental and emotional distress for people aged 15 years or older was 11.6%. West Java was the province with the highest prevalence (20%), and Riau Archipelago (5.1%) the lowest (Ministry of Health, 2008). The groups most vulnerable to mental and emotional distress were those in older age groups, females, people with no education, the unemployed, those living in rural areas, and those with the lowest household expenditure (Ministry of Health, 2008).

The government of Indonesia is unable to address the huge need for mental health care of the population. There is only one psychiatrist available per 500,000 persons, one psychiatric nurse per 100,000 persons, and one psychologist per 200,000 persons (Jacob et al, 2007; WHO, 2001).Other problems that complicate the delivery of mental health services include the lack of training in mental health for physicians and the unequal distribution of resources among different provinces in Indonesia (Ministry of Health, 2011).

1.4.2. Trauma aspects

At the community level, forced displacement disrupts the lives of the affected population by destroying houses and belongings, breaking up families and communities, creating unemployment problems, and forcing survivors to live in worse socioeconomic conditions or to suffer marginalization (Shanmugaratnam, 2003). In a violent conflict between ethnic groups, communities might face ethnic cleansing, persecution, harassment,

or genocide (De Jong, 2002). Disruption of the community by "outsiders" who might come to give assistance can also increase distress, health risk behaviors, and risk of PTSD (Ursano et al, 2007).

For individuals, the burdens imposed by a disaster may worsen, because the disaster may start a sequence of events that sets a person's life on a downward spiral (Fullerton, 1997). Individuals and families may suffer from a range of acute hardship, including torture, rape, abduction, sexual violation, war wounds, deprivation of basic needs, loss of a home, loss of loved ones, or premature death (De Jong, 2002).Living as a refugee creates a chain of family disruption, regardless of whether this occurs in a high-or low-income country (Hollifield, 2002; De Jong, 2002). The most vulnerable groups are women, children, and older persons.

Studies of the mental health of forced migrants are often limited to include only psychopathology, and few have focused on common sources of stress, such as the post traumatic reaction to the acute stress of war (Marsella et al, 1996).Immediately after extreme trauma, a person might experience a time-limited but acute stress disorder (De Jong, 2002). Longer-term and more serious reactions include PTSD, depressive disorder, substance abuse, panic disorder, generalized anxiety, phobia, antisocial and other personality disorders, psychosis, organic brain syndrome, and associated medical and social problems (Friedman & Jaranson, 1994; Westermeyer, 1986; Keehn, 1980; Westermeyer, 1985; Yesavage, 1983; Corcoran, 1982; Kirmayer, 1996). The high rates of psychological disturbances among persons exposed to trauma through war and disaster are well known (Kulka et al, 1990; Pynoos et al, 1987; Rubonis et al, 1991).

The association between mental health problems and traumatic experiences has been reported in various studies. Torture was noted as a risk factor for PTSD in Algeria,

Ethiopia, and Gaza, where as the death of, or separation from, the family was noted as a risk factor in Cambodia (De Jong et al, 2002). More than 30 events were listed as traumatic experiences by Karenni refugees in Thailand, and having a higher number of exposures to trauma was associated with worse mental health conditions (Cardozo-Lopez et al, 2004).

The impact of disaster affects more than just those who experience it directly, although people exposed directly to severe incidents are at the highest risk of PTSD and other psychiatric problems (North et al, 1999). The risk for mental health consequences generally decreases with increasing distance from the center of the disaster and with decreasing exposure of affected individuals (Shore et al, 1989). This has been described as the ripple effect of disaster: mental health problems spread outward from the center of a disaster in a diminishing ripple pattern (Galea et al, 2002; 2003; Fullerton et al, 2007).

1.4.3. Positive mental health

The concept of positive mental health studied through an empirical approach has been explored only in the past 30 years. Previously, there was an implicit assumption that mental health is best described as the absence of mental illness (Vaillant, 2003). In the late 1930s, an interdisciplinary study of both positive mental and physical health was conducted at Harvard as part of the study of human development (Heath, 1945; Vaillant, 1977). The report inspired the USA President's Commission on Mental Health in 1978 to emphasize the importance of clearly defining mental health (Vaillant, 2003). In 1993, evidence emerged to support the validity of Axis V (the Global Assessment of Functioning/GAF Scale) in Diagnostic and Statistical Manual IV, a metric used in the measurement of mental health today. Some studies have found that positive mental health is independent of mental illness (Tennant et al, 2007; Keyes & Westerhof, 2011). People with mental illness have varying levels of positive

mental health, and people who do not have mental illness may still lack positive mental health (Huppert & Whittington, 2003).

The term positive mental health is a complex construct that covers both experience and functioning and has two distinct perspectives—the hedonic perspective, which focuses on the subjective experience of happiness and life satisfaction, and the eudaimonic perspective, favored by the positive psychologists, which focuses on psychological functioning and self-realization (Ryan & Deci, 2001). The concept of mental health includes but is not limited to subjective well-being, perceived self-efficacy, autonomy, competence, intergenerational dependence, and self-actualization of one's intellectual and emotional potential (WHO, 2001). Positive mental health refers to positive manifestation of one's psychological capacity rather than being just the absence of mental illness (Jahoda, 1998; Seligman & Csikszentmihalyi, 2000; Vaillant, 2003). Different measures are required to describe positive mental health and mental illness. Some of the conceptual approaches to assessing positive mental health are positive psychology, maturity, social–emotional intelligence, subjective well-being, and resilience (Vaillant, 2003).

The effects of negative life events and traumatic experiences are not necessarily all adverse, although the mental health consequences of disasters have been associated with disability than can persist for years (Ursano et al, 2007). Most individuals exposed to extreme events are remarkably resilient (De Jong, 2002). The definition of resilience is the ability of an adult, in otherwise normal circumstances, who is exposed to an isolated and potentially highly disruptive event, such as the death of a close relation or a violent or life-threatening situation, to maintain stable, healthy levels of psychological and physical functioning as well as the capacity for generative experiences and positive emotions (Bonnano, 2004). There are several indicators of resilience, starting from having one or no

PTSD symptoms, and ranging to coping and personal qualities that allow individuals and communities to grow in the face of adversity (Bonnano et al, 2006; Connor & Davidson, 2003; Luthar et al, 2002; Richardson, 2002).

In this study, positive mental health is represented by resilience, which can be measured using the Sense of Coherence (SOC) and the Subjective Well-Being (SWB) scales. These approaches were chosen as the most relevant and feasible approaches for the study of communities in a post conflict setting.

The concept of "salutogenesis" as the basis of a"sense of coherence" has been addressed by other theorists using other concepts (Geyer, 1997). According to Antonovsky, similar concepts are the "hardiness" described by Kobasa, the "sense of permanence" described by Thomas Boyce, the domains of social climate described by Rudolf Moos, and the construction of reality by families described by David Reiss (Antonovsky, 1987). Another similar concept is the "self-efficacy" described by Bandura (Geyer, 1997). Considering these associations, the researcher chose to use the SOC scale as an indicator of resilience. Sense of coherence refers to a global orientation that expresses the extent to which one is confident about the manageability, comprehensibility, and meaningfulness of one's life. According to Antonovsky, when confronting stressors, a person with a strong sense of coherence is able to clarify and structure the nature of the stressors, believes that appropriate resources are available and can be mobilized to deal successfully with the challenge, and is motivated to deal with the stressors (Antonovsky, 1987; Cederblad et al, 2003).

Subjective well-being is defined as a multidimensional subjective construct that refers to an individual's degree of satisfaction in different areas or aspects of life (Lever, 2000). These aspects include work, children, economic well-being, marital status, family in general, personal development, sociability, personal perception, recreation, social environment, and

family of origin. In short, subjective well-being is a person's cognitive and affective evaluation of his or her life and is influenced by many factors, such as heredity, environment, socioeconomic factors, and culture (Diener, 2000; Diener et al, 1999).

1.4.4. Cultural issues in mental health assessment

A review of the field of international psychiatric epidemiology showed wide variation in the prevalence of mental disorders among countries and regions (Demyttenaere et al, 2004; WHO, 2000). Several national surveys have shown substantially lower rates of common mental disorders in Northeast and Southeast Asia compared with English-speaking countries of the West (Steel et al, 2009; Demyttenaere et al, 2004). One possible reason relates to the accuracy of commonly used international measures to estimate the prevalence of mental disorders in some Asian cultures (Shen et al, 2006; Steel et al, 2005). A study of mental disorders among Vietnamese in Vietnam, Vietnamese in Australia, and Australians indicated that there are actual differences in the prevalence of mental disorders between cultures, and that Vietnamese people have a different threshold of experience of disability before they will report psychiatric symptoms (Steel et al, 2009). The tendency of cultural stoicism combined with shame and stigma attached to mental health problems may make Asian people more likely to suffer without complaint, which might have led to underestimation of the actual prevalence of mental disorders in Asian populations (Ryder, 2008; Beiser, 1987). These studies emphasize the importance of using culturally appropriate measures of mental health in different contexts.

As important as it is to consider cultural issues in the study of mental health among forced migrants, few studies have compared directly the reactions of different cultures or nations to similar events (Marsella et al, 1996). One of the main reasons is the difficulty in

applying the same methodology to different ethnic or cultural groups, which may differ in their exposure or vulnerability to trauma or may have different personal and social resources for coping with trauma. Other methodological difficulties, such as translation and cultural differences, complicate accurate measurement (Westermeyer & Janca, 1997). Marsella et al (1994) suggested the importance of recording a given population's own perception of the meaning of the conflict, their trauma, and the ways they express psychological and spiritual distress, as well as understanding the strategies they use to overcome these adversities.

Current transcultural research methodology emphasizes the importance of cultural validation of the instruments used to measure outcomes (Mollica et al, 1992; Van Ommeren et al, 1999). Culturally validated instruments ensure several forms of equivalence between the original and translated instruments (Flaherty et al, 1988) and the process of translation (Brislin, 1986).Understanding the local concepts of mental illness and specific syndromes is an important step in creating locally appropriate study instruments with which to measure the prevalence and incidence of mental illness and to evaluate the effectiveness of innovative intervention strategies (Bass et al, 2007).

1.4.5. Poverty and mental health

Poverty is linked to poor health status (Saxena et al, 2007). Epidemiological data from several low- and middle-income countries show that people with a low educational level and low income are most vulnerable to common mental disorders, irrespective of the society in which they live (Patel et al, 1999). Relative poverty and inequality within communities are associated with increased risk of mental health problems (Murali & Oyebode, 2004; Patel et al, 1999). Poverty and its associated factors are linked to the onset of mental disorders in

both children and adults (Murali & Oyebode, 2004; Patel & Kleinman, 2003). However, not all studies have reported a link between poverty and mental illness.

Poverty and socioeconomic problems are thought to be among the most important factors associated with mental disorders (Cashman et al, 2005; Patel & Kleinman, 2003). A longitudinal study identified poverty as a risk factor for common mental disorders in women in India (Patel et al, 2006). A cross-sectional study in Sumatra, Indonesia, showed that low socioeconomic status is strongly associated with poor mental health in rural communities (Bahar et al, 1992). Another study of Indonesian women showed that those with lower socioeconomic status had lower subjective well-being compared with groups with higher socioeconomic status (Eggleston et al, 2001).

Poverty and rapid societal changes are considered two of the main reasons for deteriorating mental health among migrants (WHO, 2001).Better economic opportunities and permanent accommodation are associated with better mental health among forced migrants (Porter & Haslam, 2005). Forced migrants find it difficult to achieve secure material conditions after losing their income sources and property as a result of the conflict or other disaster that forced their migration. The forced migrant's economic situation often worsens because of limited access to land and jobs (IDMC, 2005). Other research has shown that the low socioeconomic status of forced migrants is a risk factor for PTSD, anxiety disorder, and depressive disorder. Poverty deteriorates well-being and contributes to lower self-esteem, feelings of losing sight of the meaning of life, and dramatic changes in social contacts and culture (Beiser et al, 1993; Thabet & Vostanis, 1998; Ahearn & Noble , 2004).

Poverty in itself is a serious problem in Indonesia. At the national level, 54% of the population lives on less than US$2/day (Indonesia Statistical Body, 2007). Indonesia uses consumption of less than 1500 calories per day per adult as an indicator of poverty in the

National Socio and Economic Survey (Susenas, 2005). In the eastern Indonesia region, where the study area is located, the incidence of poverty was 43–61% in 2006 (Indonesia Statistical Body, 2007). Although there are no data specifically for Ambon Island, the poverty estimate is worse than the regional figure because of the detrimental effects of the conflict and violence.

1.5. Context of our study

Few studies of IDPs have been conducted in Indonesia, especially before the tsunami disaster that hit Aceh province in late 2004. Some reports on IDPs living in violent conflict situations were unclear in the methodology and indicators used. A mental health assessment conducted by the government in 2001 indicated that 55–60% of IDPs experienced psychological problems (OCHA, February 2002, in idpproject.org, 2002). The displaced persons in Poso were the most affected by emotional distress, with levels well above those of the IDP population in general (WFP, "Poso district", June 2002, p. 20 in idpproject.org, 2002). Psychological assistance to cope with the trauma experienced during the conflict has been reported as an urgent need in most provinces affected by displacement. The survey showed that three districts had high scores for emotional trauma among women and men: East Aceh, North Aceh, and Langkat (North Sumatra). The prevalence of emotional trauma among children was generally lower than among adults, but the highest rates were observed in East Aceh, North Aceh, and Pontianak (WFP, June 2002, in idpproject.org, 2002).

The present study is a follow-up study of previous fieldwork to investigate the time perspective and mental health among IDPs in Ambon Island, Indonesia, which was conducted in mid-2003.The fieldwork showed clearly that forced migration has created

profound and sudden changes among the displaced persons that have affected family life and social dynamics. Many of these IDPs experienced trauma during the pre migration, migration, and post migration periods. They witnessed, and were victimized by, life-threatening situations, but they have received little help for mental health problems. They also had little confidence in their security in their new places of residence, and this lack of confidence was mixed with anxiety and fear that violence could erupt again at anytime (Turnip, 2004; LAPPAN, 2005).

2. STUDY AIMS

2.1. General objective

The researcher wanted to study both the vulnerability and resilience of communities in relation to violent conflict and forced migration. I wanted to identify the risk factors for poor mental health as well as protective factors against it by studying the individuals involved. I aimed to study the communities affected by violent conflict in Maluku, Indonesia, at various levels of exposure. The focus of the study was the cultural context and the specific characteristics of IDPs living in low-income countries, especially in relation to poverty. The general objective of this study was to investigate the mental health consequences, and their associated factors, of violent conflict among communities with different levels of exposure to conflict in Maluku.

2.2. Specific objectives

The specific objectives of this study were:

1. to investigate the prevalence of mental distress across different household roles among IDPs in Maluku (paper 1),
2. to compare the mental health of people with different levels of exposure to violent conflict among communities in Maluku (paper 2), and
3. to explore aspects of positive mental health and the changes in mental health during a one-year period among IDPs in Maluku (paper3).

3. MATERIALS AND METHODS

This was a prospective longitudinal community study. This design did not include any planned intervention by the investigators for any of the villages. All changes that took place during the one-year period were spontaneous changes and were measured. Data were collected twice, with a one-year interval between the collections. Internationally accepted instruments that have never been used in Indonesia were culturally adapted according to current methods of cultural validation.

All participants were identified using probability sampling. The researcher used random sampling, by which samples are drawn from a population such that every possible sample of a particular size has an equal chance of being selected (Kerlinger et al, 2000). Because of the unavailability of information about the prevalence of mental health problems among IDPs in Indonesia, the researcher estimated the necessary sample size of IDP participants using the formula by Yamane (1967), which is a simplified formula to calculate sample size: $n = N / [1 + N(e)^2]$.

Where n is the sample size, e is the desired level of precision, and N is the size of the population. This formula aims to provide a representative sample of the community. In a psychological study, the most common sampling error that can be tolerated is 5%, and the researcher adopted this number. The IDP population in the study area during the preparation stage was 170,590. The estimated sample size was 400 individual participants, which the researcher equated to 200 households under the assumption that each household would include two adults who would each be eligible for inclusion in the study.

3.1. Sampling procedures

3.1.1. IDP participants

The researcher used a multistage sampling technique to select samples from different relocation areas and camps on Ambon Island. First, we mapped all of the relocation and camp areas on Ambon Island. The researcher then categorized them into different groups based on the characteristics of the relocation areas in Ambon Island, which included the camps, supported relocation areas, unsupported relocation areas, and returnee areas, to ensure sufficient variation in living conditions based on those types of resettlement. The researcher next randomly selected 1–3 locations within each category, and finally, the researcher randomly selected 20 households in each location by a draw.

Ten locations were selected from about 85 camps and relocation areas with different conditions on Ambon Island. The researcher sampled from four groups: IDP camps (Taman Hiburan Rakyat, WismaAtlet), supported relocation areas (Tanah Putih, Waiheru, Pawarwandan, Amaori, Iha Lengkong), unsupported relocation areas (Waiheru Baru), and returnee areas (Waringin, Waai). These types of resettlement are representative of all types of IDP resettlements on Ambon Island.

The IDP camps were the first temporary shelter in which the IDPs lived after the conflict started. The camps were usually placed in public function buildings, such as sport stadiums, hajj dormitories (a dormitory specially built and used for preparation for the Islamic pilgrimage to Saudi Arabia), exhibition halls, and multifunction halls. The conditions in these camps were the worst among all types of IDP settlements. There was no privacy for families, women, or children. The amenities were usually very limited and lacked clean water and kitchens. The camps were usually overcrowded and dirty, and the IDPs experienced disruption of their household rituals, habits, and rules. After living in the camps for some

time, IDPs moved to relocation areas, where they usually started to live their “normal” life and reestablish the order of their households. Some IDPs tried to return to their old lands or houses, or to receive compensation for their property. In the supported relocation areas, the IDPs received relocation money from the government, and in the unsupported relocation areas, the IDPs built their houses independently without any help from the government.

The inclusion criteria for this study were being an IDP living on Ambon Island during and after the violent period, aged older than 18 years, and sufficiently competent in Bahasa Indonesia. The exclusion criteria were having a hearing problem, mental retardation, or dementia (based on a psychologist’s assessment).

A list of IDP households was requested and obtained from each resettlement leader. The researcher randomly selected 20 households from each list. The researcher wrote the names of all household heads on small pieces of paper, put the names together in a bucket, and randomly picked 20 names. The researcher then approached each selected household and asked all individuals therein aged older than 18 years to participate in the study.

At the first data collection in 2005, 474 of the 480 adults approached consented to participate. After excluding three participants because of incomplete responses, a dataset of 471 (99%) participants was finalized for further analysis. There were 11 incomplete responses on one instrument (HSCL-25), and these participants were excluded from the analyses that required HSCL-25 results (paper 1).The second data collection involved 399 of the persons whose responses were analyzed in the first phase in 2005 (85% of the first sample).The data collection team could not find 38 participants, because they had moved to areas outside Ambon Island; they could not locate the current addresses of 19 participants; 11 persons refused to participate for various reasons (e.g., severe illness, too busy, could not

find a convenient time to participate); and four persons had died since the first data collection.

3.1.2. Non-IDP participants

Non-IDP participants were those that lived in areas that had never been exposed directly to violent conflict in Maluku. These areas have never been the scene of conflict, probably because of the religious homogeneity within them, and therefore they did not have any IDPs. The non-IDP sample was selected initially by carefully applying our criteria for inclusion and exclusion in these areas in Maluku province. The researcher found two villages on two different islands that fit our criteria, and the researcher then conducted random sampling by draw to select about 30 households. Cross-sectional data were collected on Buru and Saparua islands in September 2006. Both islands are located 300–400 kilometers from Ambon Island, and it took up to 15 hours to reach them by ferry and car. One village was chosen from each island:Booi village on Saparua Island and Kayeli village on Buru Island. The selection criteria for the villages were that they had not experienced any violent conflict related to the Maluku conflict, that fewer than 5% of their inhabitants had participated actively in the Maluku conflict outside their own village (according to information from local district and village leaders), and that they were geographically accessible by public transportation.

The inclusion criteria for participants were that they had lived in the selected village during and after the violent period (in the past six years), were older than 18 years, had never been actively involved in the violent Maluku conflicts, were sufficiently competent in Bahasa Indonesia, and did not have hearing problems, mental retardation, or dementia

(psychologist's assessment). Of the 120 people the researcher approached, 111 agreed to participate in the study (93%).

3.2. Instruments

The researcher used the 25-item *Hopkins Symptom Checklist* (HSCL-25) to measure psychological distress in the preceding week. This is a self-administered questionnaire designed originally to measure changes in 15 anxiety and 10 depression symptoms during psychotherapy. The symptoms are assessed using a four-point severity scale ranging from 1 (not at all) to 4 (extremely) (Mollica et al, 1987). This instrument has been used widely in studies of forced migrants in different countries (Hollifield, 2002), including IDPs in low-income countries (e.g.,Thapa & Hauff, 2005). The scores can be treated as continuous scores or collapsed into "case" and "noncase" categories using a mean score of 1.75 as a conventional cutoff point (Derogatis et al, 1973; 1974). The researcher adopted the conventional cutoff point in this study, because a previous study in a similar Asian population found it to be appropriate (Hollifield, 2002).

The short version of the SOC questionnaire comprising 13 items (SOC-13) was used. The SOC scale is a seven-point semantic differential Likert scale. Conventionally, each item is scored from 1 to 7 for "positively" formulated items, with "negatively" formulated items scored in reverse. The scores are then added to produce the SOC score; a higher score indicates higher sense of coherence (Antonovsky, 1987). The SOC-13 has been used in low-income countries and in postwar settings (Antonovsky, 1993; Ghazinour, 2004).

The researcher performed cultural validation for the HSCL-25 and SOC-13 instruments using the translation monitoring form (Van Ommeren et al, 1999).The cultural

validation process includes translation and back translation by different persons followed by comparison of the two translation results by a bilingual mental health professional, evaluation of the local language translation in a focus group discussion by lay people, and a pilot study. The HSCL-25 did not require any major changes. This instrument was easy to administer in our population, and the response style to the items was easy to follow and understand. The SOC-13 required major adjustment, especially in the response options for the items. The respondents found it difficult to understand the original seven-point response style. They also had difficulty understanding the format of the choices in the scale, because each item has different possible answers, some ranging from "very often" to "seldom" and others ranging from "very much appropriate" to "very much inappropriate". Following the strong advice from participants in the focus group discussion during the cultural validation, the researcher changed the seven-point semantic differential scale into a five-point scale and translated each scale into five different choices, similar to multiple-choice styles. The sum of all SOC-13 items was then multiplied by 7/5 to make the total score comparable to other results (Hollifield et al, 2002).

The SWB questionnaire used in this study was part of a larger set of instruments of family planning research developed in Indonesia and had been culturally adapted to the Indonesian setting in general (Eggleston et al, 2001). The researcher selected 27 of the 28 items in the general SWB instrument, excluding only the item that asks about satisfaction with the ability to control one's pregnancy, because it was not relevant to our aims and it could be answered only by women. The SWB is a self-rating questionnaire, where participants rate themselves on statements of general subjective well-being on a scale from 1 ("not satisfied/not applicable") to 4 ("satisfied/fully applicable"). All scores were summed to calculate a single SWB score. Scores ranged from 27 to 108, with a higher score indicating

better subjective well-being and a lower score indicating worse subjective well-being (Irwanto et al, 1997).

The researcher developed our socioeconomic and demographic questionnaire in Maluku. This questionnaire was based on the indicators from the National Socio Economic Survey in Indonesia and on local, well-known indicators of poverty (Susenas, 2003). The researcher conducted several interviews and focus group discussions, followed by a field trial to identify in more detail the relevant domains and items to measure socioeconomic levels in Maluku. The poverty level was measured by three domains. The first was a *structural domain* comprising five items on educational level, disruption during the conflict period, employment status, and income and gifts received from outside the household in the preceding three months. The second was a *consumption domain* comprising five food items and four nonfood items designed to differentiate between the well off and the poor. The items were relevant to the consumption habits in Maluku, such as consumption of fish (instead of meat), certain kinds of fruit, milk, clothes (besides the school uniform), and recreation. The researcher also asked the participants about their expenses in this domain, although these details proved difficult to obtain. The last domain was an *asset ownership domain* comprising the 10 items that best defined one's socioeconomic status in the local setting. The items included ownership of the house and amenities in it, ownership of a vehicle, such as a motorcycle, and some items that were unique to communities in Maluku, such as ownership of clove and/or nutmeg trees and of karaoke equipment.

Traumatic experience categories relating to the conflict period were derived from the events reported most often by IDPs in Ambon Island. The researcher conducted several informal interviews and discussions with the IDPs to explore their experiences during and after the conflict. These experiences included witnessing murder, feeling that one's life was

always in danger, witnessing violence toward people and/or property, having a close family member die because of the conflict, and experiencing injury because of the conflict. The format of the response was a “yes” or “no” answer for each experience. Data were analyzed both individually for each item and to compile a total list of all items.

The IDPs were also asked two questions about their current physical health conditions: whether they had experienced physical illness during the preceding week and whether they had experienced a long-term illness that had lasted at least three months, although not necessarily at the time of completing the questionnaire. These questions were also formulated to have “yes” or “no” answers.

Local assistants who had undergone specific training for the project collected the data during home visits. Respondents were asked to complete the questionnaires by themselves but in the presence of the assistant, in case the respondent had any questions about the items. If a respondent was not capable of completing the questionnaire on his or her own, the assistant would help by reading each item aloud to the respondent and writing down the response.

3.3. Statistical analysis

The researcher performed chi-square tests and *t* tests (for paired and independent groups) to identify differences in variables with two categories. ANOVA was performed for variables with more than two categories, followed by Tukey’s HSD post-hoc analysis when appropriate. The researcher used regression analysis to identify predictors (B and beta coefficients) when the outcome variables were in continuous form. Logistic regression

analysis was used to identify risk factors and odds ratios when the outcome variables were dichotomous.

Various background factors were considered as potential confounders, and the analyses were adjusted for these factors. Interaction and nonlinearity were assessed. The researcher used SPSS version 14 for the statistical analysis. All significance tests were two sided with a significance level of 0.05 (SPSS, 2005).

The longitudinal analysis part of this study was analyzed using structural equation modeling (SEM), in which the general idea is to create different hypothetical models based on competing theories within a specific field of research and to investigate which one fits the data best (Joreskog & Sorbom, 1996). The researcher tested the initial measurement model, and then a number of path analyses were performed to model the relationships between the variables. The researcher modified the model using the same data, driven by modification indices and *t* values. The software used for the SEM was LISREL 8.8 (SSI, 2004).The researcher reported some of the most widely used criteria to determine the model fit, such as the chi-square value, comparative fit index (CFI), and root-mean-square error of approximation (RMSEA).

3.4. Community-based participatory research (CBPR)

This study used a combination of conventional quantitative methods and community-based participatory methods. When the researcher started the study, the researcher planned to use conventional research methodology, in which the researcher is the main person who formulates the research problem and decides all steps used in the research process (Israel et al, 2003; Gravetter&Forzano, 2006). Although I used my experience in

working and conducting previous research in IDP communities in Ambon Island, I designed the research process without consulting with the communities. However, during fieldwork, I started to apply some principles of CBPR, such as committing to conduct research that shares power with and engages community partners in the research process and that benefits the communities involved (Israel et al, 2003).

Applications of the CBPR principles in our study were started during preparation for the data collection process. The first CBPR principle that the researcher applied was to build on strengths and resources within the communities (Israel et al, 1998; 2003). The researcher recognized individual skills in the communities and recruited research assistants from among the IDPs. Nine persons were selected to collect the data because of their willingness and availability. The research assistants were trained for two weeks before the first data collection process in 2005. In the first week, they received information about the study, learned basic interview techniques, and received instruction about using the data collection tools. The research assistants were encouraged to share their knowledge about local terms that might be useful in the interviews. The assistants were also taught how to enter the data into the master tables.

The researcher developed a standard explanation for every item in the questionnaires for the research assistants to use in case the respondents asked questions. After one week of practice conducting data collection within the group, the research assistants continued to practice in the communities. In the second week, the research assistants conducted the pilot phase of the study, using the tools to practice data collection with IDPs with characteristics similar to those of our intended participants.

Before the second data collection, the researcher repeated the preparation stage, although less thoroughly than the first time. The researcher managed to rerecruit almost all

of the research assistants who helped us during the first data collection (except two), and added two new research assistants to make up the total of nine. The researcher had refresher training to remind the research assistants of all the processes they were about to conduct in the field. Through these activities, the researcher fostered co learning and capacity building among all partners (Israel et al, 1998; 2003).

Other CBPR principles applied included integration and achievement of a balance between knowledge generation for the mutual benefit of all partners (Israel et al, 2003), dissemination of results to all partners, and partners' involvement in the wider dissemination of results (Schulz et al, 1998; Israel et al, 2003) and in a long-term process of and commitment to sustainability (Hatch et al, 1993; Israel et al, 2003). The researcher did not intend to use the data only for our own benefit, such as for academic achievement. The researcher presented seminars for community members and health care personnel to disseminate the results and recommendations for improving mental health services in Ambon Island. The researcher created a handbook for stress management and intervention for the communities to enable them to disseminate the interventions in the wider community.

3.5. Organization of the fieldwork

The researcher organized the fieldwork in Ambon Island. In 2003, the researcher started collaborating with one local NGO in Ambon Island, LAPPAN (Foundation for Empowering Women and Children), to conduct research on mental health among IDPs. In 2005, the researcher contacted LAPPAN again and asked for their help. Our previous experiences taught that it is crucial to have a reliable partner in the area, because I do

notreside in Maluku. Maluku and Ambon Island have gone through vast changes between 2003 and 2005, and the researcher needed to reorient ourselves in the area, although the researcher had worked there for several months in 2003.

In 2005,LAPPAN again helped us at all stages of the fieldwork. They gave us an overview of the current situation in Maluku and took us to see various camps and IDP relocation areas. Before the researcher arrived in Ambon city, LAPPAN had already informed several research assistants at the local university and some community leaders about our research. This allowed us to start training the research assistants as soon as the researcher settled into the accommodation in Ambon city. LAPPAN also helped us find safe and comfortable accommodation suitable to our needs. In short, the researcher felt that LAPPAN helped us by acting as an intermediary between researchers from outside the area and the local communities in Maluku.

The researcher lived in the middle of one of the IDP communities, whose population had just returned to their renovated houses. The neighborhood where our house was located is close to the city center. The houses in the area, including the house the researcher lived in, were burnt down during the conflict in mid-2004 and had just been renovated when I arrived. The electricity had just been reconnected to the neighborhood on the day the researcher moved in, and in the first week, some of our neighbors asked us to give them some clean water and to drag a cable from our electricity box to light their 15-watt light bulbs. The neighborhood is considered a border area between Muslim and Christian areas in Ambon city, and our house stood exactly on the dividing line of the two religious areas. The house was very small, with a main living area measuring only 4×4 m; it comprised two very small bedrooms and a living room, which the researcher used as an office and as storage space for all the research materials.

Despite the physical limitations of our accommodation, I felt that I could work efficiently there. We tried to join community activities as much as possible and to get to know most of our neighbors. In the house, we held coordination meetings before going to collect the data and discussions after we returned from the field, and performed data entry. The assistants were also trained to conduct the data collection in the house.

We stayed in the house for more than four months during the first fieldwork period, and returned to the same house for the second fieldwork period one year later. The neighborhood had change a little. It was more crowded and alive than in the previous year. Our neighbors who had lived there the year before recognized us. The good relationship that we had developed during the first stay helped us mingle with the local community during the second stay.

3.6. Ethical considerations

Ethical clearance was obtained from the Faculty of Psychology at the University of Indonesia, in accordance with Indonesian requirements for studies involving humans. Ethical clearance for the study was also sought from REK Norway before the first data collection in May 2005. However, the application was returned with a message that ethical clearance from REK Norway was not required for data collection outside Norway, and that clearance should be obtained from the relevant institution in the country in which the study would be conducted.

Written consent was obtained from all participants after they received all information about the study. Participation was voluntary, and participants were able to withdraw from the study at any stage without consequences. This complies with the guidelines of the

Helsinki Declaration. The researcher also collaborated with local organizations that provided psychological services to the study areas, including the psychiatric hospital and local NGOs, which agreed to provide psychosocial support if required during and after the interviews.

The study was expected to describe the mental health conditions of IDPs in Maluku and thus to help improve their mental health. The researcher conducted two seminars upon completion of the fieldwork and data analysis to disseminate our results to the IDP communities and local health care providers (see the annex). The researcher hoped that this research would also have practical implications for the participants. During the data collection process, two participants experienced slightly recurrent posttraumatic symptoms, such as flashbacks, nightmares, fear, and anxiety. The researcher provided treatment for them through several counseling sessions over two months. The counseling sessions were conducted by the main investigator, who is a clinical psychologist, and follow-up was provided by LAPPAN, our local collaborator organization in Ambon Island.

4. RESULTS

Table 1. Summary of the results

Paper	Study population	Output measures	Major output variable	Findings: factors associated with output measures
1	IDPs on Ambon Island (N=460)	HSCL-25	Psychological distress	Being a mother, female gender, lower asset ownership(only for mothers), and different traumatic events for each household role, such as having witnessed murder (for mothers) and having long-term illness (for fathers)
2	IDPs on Ambon Island and non-IDP communities on Buru and Saparua islands (N=510)	HSCL-25	Psychological distress	Main association with SOC score, gender, and status of being an IDP (proximity to the center of violent conflict or disaster)
3	IDPs on Ambon Island in two consecutive years (N = 471)	SOC-13 SWB	Positive mental health in terms of sense of coherence and subjective well-being	Positive predictor at T1 was higher socioeconomic level; negative predictor was traumatic experiences. Positive mental health at T1 and improvements in economic conditions were positive predictors of positive mental health at T2

Paper 1

Using the culturally appropriate grouping system in the communities, the researcher identified five household roles. We defined "fathers" as men who were household heads, "mothers" as the wives of men who were household heads (or as female household heads),and "daughters" and "sons" as adult children of the "mothers" or "fathers". Roles other than these in the household were categorized as "others". More mothers were identified with psychological distress compared with fathers (54% and 37% respectively, OR= 2.03, p= 0.002). Gender differences were more important factors than household roles for predicting distress levels in the community.

Different risk factors related to distress emerged for each household role. The most important risk factor for fathers was having a long-term illness (OR= 7.84, p= 0.0004). The most important risk factor for mothers was having witnessed murder (OR= 3.75, p= 0.003).For daughters, it was having a physical illness (OR= 5.05, p= 0.02). One domain of the poverty measure—asset ownership—was successful in differentiating between cases and non cases of psychological distress among mothers. The critical number of assets needed to decrease the likelihood of distress by 17% was five. The sample in this paper comprised 460 of the 474 participants who consented to participate;14 respondents were excluded from this analysis because of incomplete answers in the distress questionnaires.

Paper 2

The prevalence of psychological distress in populations affected indirectly by violent conflict was significantly lower than in the populations affected directly. The researcher confirmed the hypothesis that there would be a ripple effect of disaster, with the negative

psychological impact increasing proportionally to a person's proximity to the center of the disaster. Higher percentages of IDPs experienced each of the six kinds of traumatic events reported compared with non-IDPs. The traumatic event reported most commonly by both IDPs and non-IDPs was feeling threatened.

Both among the non-IDPs and the IDPs, being female was a predictor for distress (B for males = –0.167, $p< 0.001$). There were significantly more cases of psychological distress among IDPs than non-IDPs (OR= 1.6, p= 0.042). Economic conditions, with regard to the structural and asset ownership variables, were significantly better for non-IDPs than for IDPs ($p<0.001$ for both variables). The regression model explained 23.6% of the variance of psychological distress. The variable with the largest contribution to explaining the variance was the SOC score (6.7%), followed by gender (3.9%), and IDP or non-IDP status (2.8%). Being an IDP was a risk factor for distress, whereas a higher SOC score was a protective factor. This study indicates that the impact of violent conflicts on mental health and living conditions reaches areas far beyond the population affected directly by the conflict, , but that the damage is significantly greater for those directly involved.

Paper 3

Path analyses were conducted for the initial model of predictors of positive mental health using the data collected in two consecutive years. The output variable was positive mental health in 2005 and in 2006. The latent predictors were violent conflict experience (violcon), socioeconomic conditions (poverty), and change in economic conditions between 2005 and 2006 (changeeco). The findings confirmed that the hypothesized model fit our data, with $\chi^2 = 52.51$ (df= 45, p= 0.21), CFI= 0.99, and RMSEA = 0.019.

Predictors of positive mental health at T1 were exposure to violent conflict (negative predictor, factor loading= –0.30) and socioeconomic conditions (positive predictor, factor loading= 0.29). Positive mental health at T2 was predicted by positive mental health at T1 (factor loading= 0.41) and by improvements in economic conditions (factor loading = 0.29). Participants with higher incomes and better purchasing power at T2 had a significant increase in scores for both SOC (*t* test = –2.4, p= 0.018) and SWB (*t* test = –2.9, p = 0.005). At group level, the IDPs had high SOC and SWB scores.

IDPs possessed a sense of coherence and subjective well-being despite living with hardship and poverty in a post conflict situation. Our study contributes to the emerging concept of positive mental health by providing an empirical study. The longitudinal model showed that improved economic conditions after the violence predicted positive mental health in the future. The practical implication is that by providing systematic economic stimulation for the IDPs and the general population, authorities may be able to improve the mental health of communities affected by conflict. Income-generating activities may improve the income and purchasing power of the IDPs, which will ultimately help improve the IDPs' mental health.

5. DISCUSSION

5.1.Descriptionof the populations with different exposure levels to conflict

This study was conducted in the Maluku, in a province hit hard by violent conflicts for an extended period of time. Although the violent conflict had paralyzed many basic public services relating to economics, health, and education in the whole province, levels of exposure to the violence varied widely across islands and districts (Kompas Cyber Media, 1999–2005). The researcher conducted a longitudinal study in communities with different levels of exposure to the conflict. The researcher tried to follow for one year the residents of communities that had been exposed directly to violence during the conflict, to identify changes and their effects on mental health. Residents of less affected or only indirectly affected areas were also carefully selected as "comparison groups" to identify the severity of the impact of the conflict.

Our description of the population in the post conflict situation had many similarities with previous studies. The high prevalence of psychological distress among IDPs in Ambon Island is consistent with findings among Karenni refugees in Thailand (Cardozo et al, 2004), IDPs in Sri Lanka (Hussain et al, 2011), and Bhutanese refugees in Nepal (Thapa & Hauff, 2005).Psychological distress was more prevalent among women (55%) compared with men (37%), which is consistent with previous findings in community-based studies both among forced migrants (Cardozo et al, 2004; Chung et al, 1998; Thapa & Hauff, 2005) and in stable populations (Hansson et al, 1994; Klose & Jacobi, 2004).

The second paper confirmed our hypothesis that the conflict would have a ripple effect, with the greatest mental health impact on those at the conflict's epicenter, and then a decreasingly severe impact on less involved persons. The researcher found that people

who lived in exposed areas had higher distress levels compared with those living further from the central area of the disaster, which is consistent with the results of other studies (Galea et al, 2002; Galea et al, 2003; Ursano et al, 2007).The third paper described the protective and risk factors for mental health outcomes. Our finding that changes in economic conditions affect mental health was similar to that reported by Sareen et al (2011), who found that a reduction in individual income led to an increased incident of mental health problems. However, an increase or lack of change in income had no effect on mental health in their study. Nevertheless, low economic status has been identified as a risk factor for mental distress both in general and in post conflict populations in particular (Araya et al, 2007; Eggleston et al, 2001; Beiser & Feng, 2001; Patel & Kleinman, 2003).

5.2.Psychological distress

Papers 1 and 2 describe the distress levels of the IDPs. The respondents' average psychological distress level was significantly higher for the first data collection compared with the second. In our study, a reduction in the distress level was evident with the passing of time. This was consistent with previous studies showing that PTSD and psychological distress decrease with time in both the general and refugee populations (Steel et al, 2005; Kessler et al, 2006). Reduced mental distress was also found among Southeast Asian refugees after 10 years living in a host country (Beiser & Hou, 2001). Improved mental health was also evident among Vietnamese refugees in Norway 20 years after they first arrived, although they remain a vulnerable group compared with native Norwegians (Vaage et al, 2010).

A meta-analysis showed that secure living conditions, economic opportunity for employment, and supportive social services are among the factors associated with positive mental health in post conflict forced migrants who relocate to industrial host countries (Porter & Haslam, 2005).Similarly, the passing of time from 2005 to 2006 brought substantial changes in the security and economic situation of the IDPs in Ambon Island. In mid-2004, before the first data collection began in 2005, a major violent incident occurred in Ambon Island. This single incident created new IDPs and slowed the return of other IDPs to their homes. It also decreased residents' confidence that Ambon Island would ever be peaceful again (Kompas Cyber Media, 2004). However, between 2005 and 2006, major economic growth occurred in Ambon Island after security was reestablished and the situation stabilized. Investors started to return and rebuild their businesses, creating job opportunities for many Ambon Island residents (Ambon Statistical Body, 2008). These positive changes might explain a significant part of the reduced distress level among the IDPs.

Another apparent change was that the study area in the post conflict period was undergoing rapid economic changes, accompanying changes in social patterns and values. Our results are consistent with those of previous studies showing that a sense of belonging in a community is an important factor for decreasing mental distress, such as depression (Moscardino et al, 2010). The changes were even more evident in the year after T2 (2007),when the research team returned to Ambon Island. In a seminar attended by some of the participants in the study, we observed positive attitudes about the future. Despite still living in poverty, the participants were optimistic and had a sense of meaning in their lives.

Paper 2 presents a comparison of distress levels between the IDPs directly affected by the conflict and the non-IDPs only indirectly exposed to it. The researcher found that the prevalence of mental health "cases" was significantly higher among the IDPs compared with

the non-IDPs (41% and 30%, respectively, OR= 1.6, p= 0.042). This result indicated that the impact of violent conflict on mental health was 1.6 times higher among the IDPs, who lived closer to the center of the disaster, than among the non-IDPs, who lived further away. This is consistent with studies showing that the mental health impact of a disaster diminishes in a ripple effect pattern (Ursano et al, 2007; Galea et al, 2003). Results of the multivariate analysis revealed that IDP status was one of the most important predictors of psychological distress, having the highest contribution to the distress level after controlling for all other variables in our study population (paper 2). A previous study also found that being an IDP is an important factor contributing to distress, even compared with refugee status (Porter & Haslam, 2005).

5.3.Positive mental health

Positive mental health in this study was indicated by sense of coherence (measured using the SOC scale) and subjective well-being (SWB scale). In paper 3, SEM was used to identify several variables as predictors of positive psychology in terms of the SOC and SWB scores. One of the most important predictors of positive mental health was positive mental health status in the preceding year, which was affected by traumatic events and poverty. Paper 2 shows that there was no significant difference in the SOC score between IDPs and non-IDPs.

In general, the IDPs had high SOC scores. The mean SOC score in 2006 was well above scores for US undergraduate students and Israeli adolescent boys and girls, and only slightly lower than the scores for US university faculty members, and for religious kibbutz members in Israel (Antonovsky, 1993).The stability of SOC scores between T1 and T2 was evident

across the whole sample, and the correlation between the mean SOC scores at T1 and T2 was stronger for the older group than for the younger group. These results are consistent with the theoretical background and earlier findings showing stability in the SOC score over repeated measurements, especially among older people (Antonovsky, 1993).

The IDPs' mean SWB score increased significantly during the one-year interval among the younger IDPs, whereas there was almost no change in the older group. Younger IDPs may have adapted to the new post conflict conditions and thus felt more satisfied with developments in their life during this time compared with older IDPs. Previous studies showed that younger refugees find it easier to adapt to the new culture and lifestyle compared with older people, and that they are more successful in doing so (Beiser & Hou, 2001; Beiser, 1999; Husni et al, 2002).

In recent years, there has been an increase in interest in the role of resilience in response to disaster (Ursano et al, 2007). There is also an ongoing discussion about whether resilience and well-being are good indicators of mental health, instead of (or in addition to) the measures of distress or disorders that are often preferred as indicators of mental health. Despite acceptance of the definition of mental health as an overall state of wellness and not merely the absence of illness, the academic world is still reluctant to acknowledge positive mental health as a valid indicator of health (Wand, 2010).However, there is also growing interest in using positive mental health indicators. A recent study examining the resilient trajectory among "high-exposure" people who had been in or near the World Trade Center on September 11, 2001, when the first plane struck the towers showed that the most frequent outcome trajectory was a resilient pattern of stable low-level symptoms (Bonnano, 2004). Many survivors of the 1974 tornado in Xenia, Ohio, described positive outcomes, such as beliefs that they were able to handle a crisis effectively and that they were better off for

having met the challenges, although they had also experienced psychological distress (Quarentelli, 1985). After Hurricane Katrina in the USA, 88.5% of the disaster-impacted population reported that their experiences with the disaster had helped them to develop a better sense of meaning or purpose in life (Kessler et al, 2006).The SOC scores found in this study were no lower than those for more stable populations, although the distress level was high. This suggests that despite adversity in life, people in a low-income country like Indonesia (during the study, Indonesia was categorized as a low-income country, but recently the World Bank has changed its status to a lower-middle-income country) may possess resources to cope with difficulties, and that they believe the disaster allowed them to become better people and find meaning in life (Kessler et al, 2006).

5.4.Risk and protective factors for psychological distress

5.4.1. Gender and household roles

Being female is an important risk factor for psychological distress among forced migrants and in the general population (Cardozo et al, 2004; Thapa & Hauff, 2005; Schweitzer et al, 2006; Klose & Jacobi, 2004; Sandanger et al, 2004). The researcher found consistently that the risk of psychological distress in female IDPs was double the risk for males (papers 1 and 2). Both female IDPs and non-IDPs were more vulnerable to distress compared with their male counterparts, although the risk for female IDPs was somewhat higher. Psychological distress was more prevalent among “mothers” compared with all other household roles. Paper 1 showed that that being a mother was an important risk factor for psychological distress for IDPs. However, further analysis showed that there was no significant difference in risk factors between “mothers” and “daughters”. This result

suggested that the risk of distress was more related to female gender than to household role. One possible reason relates to the difficult living conditions in the camp, which were applicable to our IDP sample only. Life in the camps may have exposed female IDPs to more upsetting life events, and they may have been more vulnerable to abuse because of the degrading life conditions in the camps.

5.4.2. Traumatic events

The researcher found that several common traumatic experiences during the conflict affected communities in Maluku. Different traumatic experiences were identified as risk factors for distress for different genders and household roles. As described in paper 2, significantly higher percentages of IDPs experienced all types of traumatic events included in the study compared with non-IDPs. Paper 1 discusses the events that increased the risk for distress among “mothers” and “fathers”. In paper 3, the best indicator for the latent variable of traumatic experience was having witnessed violence toward other humans. Our findings are consistent with those of previous studies showing that traumatic experience is a risk factor for mental health problems (Porter & Haslam, 2005; Steel et al, 2002; De Jong, 2002;Ursano et al, 2007) and that the effects of trauma can affect different areas of functioning (Schweitzer et al, 2006).

5.4.3. Physical health and long-term illnesses

Paper 1 showed that poor physical health was a risk factor for distress for females, whereas long-term illness was a risk factor for males. For females, the presence of physical illness may increase psychological distress (Vazquez-Barquero, 1992). The presence of long-

term illness in males often had severe consequences, because they were expected to be healthy in order to protect the family from violence and to provide for them.

5.4.4. IDP status

Paper 2 showed that being an IDP was a risk factor for distress. The main difference between IDPs and non-IDPs was their distance from the center of the violent conflict. Exposure and proximity to the center of the disaster were important risk factors for psychological distress. Previous studies found that displaced persons are more vulnerable to mental health problems (Porter & Haslam, 2005; Hollifield, 2002). Another study showed that proximity to the epicenter of a disaster significantly affects morbidity rates and the degree of psychological distress (Pfefferbaum et al, 2000).

5.4.5. Sense of coherence

Sense of coherence was a protective factor against distress for both IDPs and non-IDPs (paper 2). This was consistent with previous findings that people with a higher sense of coherence can cope with stressful situations better than do those with a lower sense of coherence (Cederblad et al, 2003; Frankenberg et al, 2008).

5.5.Poverty

From an epidemiological perspective, poverty means low socioeconomic status, unemployment, low level of education, and low family status (Saraceno & Barbui, 1997). The indicators of poverty are varied and broad. Previous studies demonstrated that socioeconomic factors, such as low level of education, low income, low social class, and

unemployment, are associated with mental distress (Bahar et al, 1992; Patel & Kleinman, 2003; Patel et al, 2006; Saraceno & Barbui, 1997).

To develop an appropriate and sensitive measure of poverty in Maluku, we developed our own measure of poverty based on local indicators. This measurement tool was based on the National Socio Economic Survey in Indonesia (Susenas, 2005). When developing this instrument, we used focus group discussions with local people to improve the quality of the items. The items were categorized into three domains: the structural domain, consumption domain, and assets ownership domain.

In paper 1, the researcher reported that a lower socioeconomic status was associated with higher psychological distress only in terms of assets ownership for "mothers". For this group, ownership of five or more assets was needed to reduce the risk of psychological distress by 17%. The assets ownership domain was identified as a risk factor for distress for both IDPs and non-IDPs in paper 2. However, the interaction between assets ownership and IDP status had a stronger influence among the IDPs than the non-IDPs.

Our finding in paper 3 is not consistent with a previous study by the World Bank, which found that poverty was not a strong determinant of poor mental health (Das et al, 2007). Both the World Bank study and our study were community-based studies that invited all adult members of the sampled households to participate. However, there are a number of differences between the two studies. First, the studies used different measures of poverty and mental health. The World Bank study was based on two indicators of poverty—years of education and household expenditure—whereas our study in paper 1 used composites of comprehensive measures of poverty that covered structural, consumption, and asset ownership aspects. We used positive mental health measures such as sense of coherence and subjective well-being, whereas the World Bank study used measures of depression,

general affective disorders, and anxiety as indicators of mental health. Second, our study was an intensive, small-scale, community-based study among IDPs, whereas the World Bank study was a large study of aggregated data at the national level. This makes it difficult to compare the results, especially because the researcher did not find sufficient information about how the data were collected and what kinds of populations were included in the World Bank study. Third, the World Bank study was a cross-sectional study and therefore could only identify an association between poverty and mental health, whereas ours was a longitudinal study aimed at examining the causal relationships between a reduction in poverty and improved mental health.

5.6.Combinations of methods

Our study used a combination of conventional methods of epidemiology and CBPR. The researcher conducted the epidemiological study through face-to-face interviews as part of the data collection process. As discussed by Norris et al, this combination should have several advantages, such as the generalizability of findings, ability to collect more comprehensive data, and opportunity to build personal rapport with the affected community (Norris et al, 2003). The researcher found that those benefits applied to our study.

The researcher was able to collect more comprehensive data about the communities through participative observations and several informal interviews. The knowledge this yielded about the population was useful when we tried to discuss our quantitative findings, and gave us insights for future, possibly qualitative studies. The rapport that we built with the communities under study may also be useful for future research activities. Through the method that we used to collect the data, we have contributed to bringing the communities

closer to each other (Israel et al, 2003), especially the Muslim and Christian communities. Because the research assistants were IDPs, they became intermediaries between their home communities and other communities that they visited during the data collection. We continue to maintain our relationships with the communities in Maluku, our local NGO collaborator, and research assistants.

By using a community-based participatory approach, we also enhanced our relationships with local communities in Ambon Island. The researcher maintains the good collaboration that we had during the research and therefore leave open the possibility for future follow-up research in these communities. Although the data were retained by the researcher, the results were disseminated openly to all community partners.

This study applied some principles of CBPR. This approach strengthened the study especially in the sense of the cultural adaptation process, which was reflected on the community's positive responses to the measurement tools (Minkler&Wallerstein, 2003). The data collection process went smoothly, because the participants were involved actively in the process of deciding the time to meet, and they were willing to participate after learning about the research topic. The researcher is not the only person to benefit from the study. The researcher disseminated the findings to the communities and health care providers in the area; that is, we attempted to empower them to understand their own mental health conditions and their right to receive better mental health services, and we informed health care providers about major mental health needs in their catchment areas. The use of a CBPR approach also helped build rapport through the face-to-face interviews with participants from the local communities (Minkler&Wallerstein, 2003; Israel et al, 2003).

5.7.Quality assurance of the data

The researcher used several strategies to reduce the risk of errors that might occur during the data collection and analysis. Sufficient training was provided before each data collection period for all research assistants. We developed a standard procedure for data collection that included a standardized explanation for each item, cross-checked the data entry, and provided a trial for research assistants before the actual data collection.

During the preparation and the data collection processes, we held a meeting at the end of every day to discuss the challenges, obstacles, and problems faced throughout the day and to come up with possible solutions. The principal investigator was present at all times during the practice, trial, and data collection processes in the field to provide help to the research assistants when needed.

Our data analysis involved handling sensitive information about the culture and communities of the study areas. The researcher analyzed the data according to household roles, because these roles were more prominent in the participants' daily lives compared with gender differences (Andaya, 1990). This type of analysis was also performed to avoid a clustering effect, which could result if data such as socioeconomic measures were collected at the household level.

5.8.Validity, reliability, and generalizability

The question of validity may be relevant, because some of the instruments used in the study, for example theHSCL-25 and the SOC-13, were not developed specifically for Indonesia or low-income countries. Previous studies have used these instruments and have adapted them in some low-income countries and population displacement settings

(Almedom et al, 2005; Ghazinour, 2004; Thapa & Hauff, 2005). However, we still addressed the issue of the validity of these instruments by performing cultural validation and checks for reliability in terms of their psychometric properties.

The results of the cultural validation indicated that both the HSCL-25 and SOC-13 had gone through some wording adjustment to accommodate the local language (Bahasa Indonesia) and the dialect in Maluku. The cultural validation process conducted before the data collection ensured the quality of the data taken from our samples. The reliability of the instruments was shown by the high value of Cronbach's alpha for both the HSCL-25 and SOC-13, which were consistent with previous studies (Derogatis et al., 1973; Antonovsky, 1987).

The epidemiological approach was selected because the researcher intended to generalize the findings from our study to other communities affected by violent conflict in Indonesia (Gravetter&Forzano, 2007). The key to generalizability is obtaining a representative sample (Kerlinger, 2000), and we believe that our technique ensured the sample's representativeness of the Maluku population. Therefore, the researcher is confident that the results of the study can be generalized to the displaced communities in Maluku, although the results may also have relevance for other conflict-affected areas in Indonesia and in other low-income countries with characteristics similar to those of our study area. The technique that we used to draw the non-IDPs sample identified a representative population that was less affected by violent conflict in Indonesia. We are optimistic that the results from this sample can be generalized to other areas in situations similar to that in Indonesia. We believe that the improved and culture-oriented methods applied in this study could be relevant to displaced and non displaced persons living in low-income countries affected by violent conflict.

5.9.Strengths and limitations

Our study was a community-based study of the mental health of populations affected by violent conflicts in a developing country. This kind of study is rare, despite the high number of violent incidents in low-income countries. Our longitudinal study design allowed us to investigate potential causal relationships related to risk and protective factors for mental health. The cultural validation also benefited the study and gave us a high return rate during both data collection periods because of the applicability of the measures in the local context. A further strength in methodology was the application of the CBPR approach. This research strategy made it possible for the researcher to maintain good relationships and to be able to conduct future research in the area. Another strength of this study was the high response rate. In the first data collection, 474 persons responded out of 480 invited (98.75%), and in the second data collection, the response rate was 85% from the number participated in the first data collection. The high response rate probably reflects the acceptability of the face-to-face method of data collection.

We regarded empowerment of the IDP community as a benefit. During data collection, the assistants were local persons from both the Muslim and Christian communities, and they visited all study locations regardless of their own religion or the religion of the IDPs they were interviewing. This effort became part of the reconciliation and trust-rebuilding process between the two communities involved in the conflict. The decision to have research assistants from the IDP communities and to disseminate the research results among these communities thus contributed to local empowerment.

A general limitation in all of our papers is the lack of background data on the mental health of respondents before the conflict period. Limitations in paper 3 were the choice of instruments to assess positive mental health, which might not have been sensitive to

changes in the environment, and the limited number of independent variables included in the model. The small sample size was also a limitation in paper 1 and prevented us from conducting analyses for all household roles. In paper 2, the cross-sectional data from the non-IDP population limited the analyses and the ability to compare with the IDP data. Extending the study by recruiting participants from more sample areas, including areas further from the center of the disaster, and by performing multiple data collections from all sample groups would increase the generalizability of the study.

The choice to use international instruments to measure distress and positive mental health is also a limitation of our study. The decision to use the HSCL-25 and SOC-13 was made because of the intention to compare our results with those of studies in other national and international settings. These two instruments were adapted carefully to ensure the applicability of the instruments in the Indonesian setting.

5.10. Future implications

5.10.1. Clinical implications

Our findings may have several practical implications. Interventions for IDPs should also include non-IDP populations, because violent conflict also affects those who are exposed to the conflict indirectly. Intervention programs should acknowledge the different needs of the communities affected; that is, risk factors may differ according to the individual's gender and household role. Positive mental health may be a potential protective factor against the detrimental effects of violence and forced migration. Nurturing and encouraging the IDPs' own resources may be more efficient and may encourage longer-lasting positive outcomes.

We identified vulnerable groups that should be given special attention when designing interventions. These groups were mothers who had witnessed murder, fathers with long-term illness, and mothers and adolescents living in a relatively poor household compared with their neighbors (especially those with very low assets ownership).The longitudinal nature of the study allows us to suggest a causal relationship. In this case, we noticed that improvements in economic conditions in turn improved the positive mental health of the IDPs.

5.10.2. Implications for future research

This study has general implications for emerging theories of the impact of violence and disasters on communities. The impact of a threat may extend to a wide range of communities with varying degrees of proximity to the origin of the conflict or disaster. Our findings are consistent with the systemic or ecological contextual approach, which indicates that the impact of violence on an individual or a community is transposed to the society at large (macro level) (De Jong, 2002). The different levels of society are interwoven and interlinked, so violence rarely occupies only the area directly affected (De Jong, 2002). The findings of our study may be useful for developing programs to provide assistance to different levels of society affected by violence.

The study would also benefit from further investigation of the impact on mental health, social functioning, and quality of life of specific interventions to reduce poverty, as indicated by the Grand Challenges in Global Mental Health initiative (Collins, 2011). We had originally planned to offer a microcredit scheme and scholarships for education for adolescents as part of an intervention program. However, because of the limited budget and

time, we could study only the longitudinal impact of spontaneouschanges in the population on mental health.

Some studies have shown that poverty alleviation programs lead to mental health improvements in low- and middle-income countries, but further studies are needed (Shanmugaratnam et al, 2003). Future studies might also be extended to include effective and affordable community-based rehabilitation programs to improve the lives of people with mental health problems in low- and middle-income countries.

REFERENCES

Ahearn, F.L.Jr., Noble, J.H.Jr. (2004). Post-civil war adaptation and need in Managua, Nicaragua. *J BiosocSci*, 36, 401-415.

Ajduković, M. (1998). Displaced adolescents in Croatia: sources of stress and posttraumatic stress reaction. *Adolescence,33 (129),* 209-17.

Alexander, A.J., Bandiera, G.W., Mazurik, L. (2005). A multiphase disaster training exercise for emergency medicine residents: opportunity knocks. *Acad Emerg Med*., 12(5), 404-9.

Almedom, A.M., Tesfamichael, B., Saeedmohammed, Z., Mascie-Taylor, C.G.N., Alemu, Z. (2005). Use of 'Sense of Coherence (SOC)' Scale to Measure Resilience in Eritrea: Interrogating Both the Data and the Scale. *Journal of Biosocial Science, 39,*91-107.

Andaya, L.Y. (1993). *The world of Maluku: Eastern Indonesia in the early modern period*. Honolulu: University of Hawaii press.

Antonovsky, A. (1987). *Unraveling the mystery of health : how people manage stress and stay well*. San Francisco: Jossey-Bass.

Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social science & medicine, 36,*725-733.

Ambon Statistical Body, BadanpusatStatistik Kota Ambon. (2003). *Kota Ambon Dalam Angka 2002*. Ambon: Percetakan Vensy Karya Ambon.

Ambon Statistical Body, Badan pusat Statistik Kota Ambon. (2005).*Kota Ambon Dalam Angka 2004*. Ambon: Percetakan Vensy Karya Ambon.

Ambon Statistical Body, Badan pusat Statistik Kota Ambon. (2008).*Kota Ambon Dalam Angka 2007*. Ambon: Percetakan Vensy Karya Ambon.

Araya, M., Chotai, J., Komproe, I.H., de Jong, J.T. (2007). Effect of trauma on quality of life as mediated by mental distress and moderated by coping and social support among postconflict displaced Ethiopians.*Qual Life Res, 16*(6), 915-27.

Bahar, E., Henderson, A.S., Mackinnon, A.J. (1992). An epidemiological study of mental health and socioeconomic conditions in Sumatra, Indonesia. *Acta Psych Scand*, 85,257-263.

Bass, J.K., Bolton, P.A., Murray, L.K. (2007). Do not forget culture when studying mental health. *Lancet, 370*(9591), 918-9.

Beiser, M. (1999). *Strangersat the Gate: The "Boat People's" First Ten Years in Canada*. Toronto: University of Toronto Press Inc.

Beiser, M., Hou, F. (2001). Language acquisition, unemployment and depressive disorder among Southeast Asian refugees: a 10-year study. *Social science medicine*, 53, 1321-1334.

Birmaher, B., Ryan, N.C., Williamson, D.E., Brent, D.A., Kaufman, J., Dahl, R.E., Perel, J., Nelson, B. (1996). Childhood and Adolescent Depression: A Review of the Past 10 Years. Part 1. Journal *of the American Academy of Child and Adolescent Psychiatry*, 35, 1427-1439.

Bonnano, G.A., (2004). Loss, trauma , and human resilience. Have we underestimated the human capacity to thrive after extremely aversive events? *American Pscyhologist,* 59, 20-28.

Bonnano, G.A., Galea, S., Bucciarelli, A., Vlahov, D. (2006). Psychological resilience after disaster: New York City in the aftermath of the September 11th terrorist attack. *Psychological Science*, 17, 181-6.

Brislin, R.W. (1986). The wording and translation of research instrument. In Lonner WJ, Berry JW (Eds). *Field methods in cross-cultural research*. Pp. 137-164.Beverly Hills: Sage.

Carballo, M., Smajkic, A., Zeric, D., Dzidowska, M., Gebre-Medhin, J., Van Halem, J. (2004). Mental health and coping in a war situation: the case of Bosnia and Herzegovina.*J Biosoc Sci,36*(4), 463-77.

Cardozo-Lopez, B., Talley, L., Burton, A., Crawford, C. (2004).Karenni refugees living in Thai-Burmese border camps: traumatic experiences, mental health outcomes and social functioning. *Soc Science Medicine*, 58, 2637-2644.

Cashman, S., Savageau, J., McMullen, M., Kinney, R., Lemay, C., Anthes, F. (2005). Health status of a low income vulnerable population in a community health center. *J Ambulatory Care Manage*, 28(1), 60-72.

Cederblad, M., Pruksachatkunakorn, P., Boripunkul, T., Intraprasert, S., Hook, B. (2003). Sense of coherence in a Thai sample. *Transcultural Psychiatry, 40,*585-600.

Collins, P.Y., Patel, V., Joestl, S.S., March, D., Insel, T.R., Daar, A.S.; Scientific Advisory Board and the Executive Committee of the Grand Challenges on Global Mental Health, Anderson, W., Dhansay, M.A., Phillips, A., Shurin, S., Walport, M., Ewart, W., Savill, S.J., Bordin, I.A., Costello, E.J., Durkin, M., Fairburn, C., Glass, R.I., Hall, W., Huang, Y., Hyman, S.E., Jamison, K., Kaaya, S., Kapur, S., Kleinman, A., Ogunniyi, A., Otero-Ojeda, A., Poo, M.M., Ravindranath, V., Sahakian, B.J., Saxena, S., Singer, P.A., Stein, D.J. (2011). Grand challenges in global mental health.*Nature, 475*(7354), 27-30.

Connor, K.M., Davidson, J.R.T., (2003). Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and Anxiety*, 18, 76-82.

Corcoran, J.D.T. (1982) The Concentration Camp Syndrome and USAF Vietnam Prisoners of War. *American Journal of Psychiatry*, 10, 991-4.

Das, J., Do, Q.T., Friedman, J., McKenzie, D., Scott, K. (2007). Mental health and poverty in developing countries: Revisiting the relationship. *Social Science & Medicine*, 65, 467-480.

De Jong, J.T.V.M., Komproe, I.H., van Ommeren, M. et al. (2001).Lifetime Events and Posttraumatic Stress Disorder in 4 Postconflict Settings. *JAMA, 286,* 555-562.

De Jong, J. (ed). (2002). *Trauma, War, and Violence, Public Mental Health in Socio-Cultural Context*. New York: Kluwer Academic/Plenum Publishers.

Demyttenaere, K., Bruffaerts, R., Posada-Villa, J., Gasquet, I., Kovess, V., Lepine, J.P., Angermeyer, M.C., Bernert, S., de Girolamo, G., Morosini, P., Polidori, G., Kikkawa, T., Kawakami, N., Ono, Y., Takeshima, T., Uda, H., Karam, E.G., Fayyad, J.A., Karam, A.N., Mneimneh, Z.N., Medina-Mora, M.E., Borges, G., Lara, C., de Graaf, R., Ormel, J., Gureje, O., Shen, Y., Huang, Y., Zhang, M., Alonso, J., Haro, J.M., Vilagut, G., Bromet, E.J., Gluzman, S., Webb, C., Kessler, R.C., Merikangas, K.R., Anthony, J.C., Von Korff, M.R., Wang, P.S., Brugha, T.S., Aguilar-Gaxiola, S., Lee, S., Heeringa, S., Pennell, B.E., Zaslavsky, A.M., Ustun, T.B., Chatterji, S.; WHO World Mental Health Survey Consortium. (2004). Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys.*JAMA, 291*(21), 2581-90.

Derogatis LR, Lipman RS, Covi L (1973) SCL-90: an outpatient psychiatric rating scale – preliminary report. *Psychopharmacology Bull*, 9, 13-27.

Derogatis LR, Lipman RS, Rickels K, et al (1974) The Hopkins Symptom Check List. A self report symptom inventory. *Behavioral Science*, 19, 1-15.

Diener, E. (2000). Subjective well-being the science of happiness and a proposal for a national index. *American psychologist*, 55(1), 34-43.

Diener, E., Suh, E., Lucas, R. E., Smith, H.L. (1999). Subjective well-being: three decades of progress. *Psychological bulletin*, 125, 276-302.

Eggleston, E., Wong, E.L., Hardee, K., Irwanto, Poerwandari, E.K., Severy, L.J. (2001). Measuring Women's Psychological Well Being in Indonesia. *Woman and Health,* 32 (4), 17-32.

Erol, N., Simsek, Z., Oner, O., Munir, K. (2005). Effects of internal displacement and resettlement on the mental health of Turkish children and adolescents. *European Psychiatry, 20*, 152-157.

Flaherty, J.A., Gavira, F.M., Pathak, D., Mitchell, T., Wintrob, R., Richman, J.A., Birz, S. (1988). Developing instruments for cross-cultural psychiatric research. *J Nerv Ment Dis*, 176, 257-263.

Frankenberg, E., Friedman, J., Gilespie, T., Ingwersen, N., Pynoos, R., Rifai, L.U., et al. (2008). Mental health in Sumatra after the tsunami. *American J Public Health*, 98, 1671-1677.

Friedman, M.J., Jaranson, J. (1994). The Applicability of The Post Traumatic Stress Disorder Concept to Refugees. In A.J. Marsella, T. Boneman, S. Ekblad& J. Orley (Eds.), *Amidst Peril and Pain: The Mental Health and Well Being of of the World's Refugees*. Washington DC: American Psychological Association.

Fullerton, C.S., Ursano, R.J. (1997). *Posttraumatic stress disorder : acute and long-term responses to trauma and disaster*. Washington DC: American Psychiatric Press.

Galea, S., Ahern, J., Resnick, H., et al. (2002). Psychological sequelae of the September 11 terorist attacks in New York City. *New England Journal of Medicine*, 346, 982-987.

Galea, S., Vlahov, D., Resnick, H., et al. (2003). Trends of probable post-traumatic stress disorder in New York City after the September 11 terorist attacks. *American Journal of Epidemiology*, 158, 514-524.

Geyer, S. (1997). Some conceptual considerations on the sense of coherence.*Soc Sci Med, 44*(12), 1771-9.

Ghazinour, M. (2004). Quality of life among Iranian refugees resettled in Sweden. *Journal of Immigrant Health, 6,* 71-81.

Gravetter, F.J., Forzano, L.B. (2006). *Research Methods for the Behavioral Sciences*. Australia: Wadsworth.

Hatch, J., Moss, N., Saran, A. (1993). Community research: partnership in black communities. *American Journal of Preventive Medicine*, 9 (6), 27-31.

Hauff, E., Vaglum, P. (1993).Vietnamese Boat Refugees: The Influence of War and Flight Traumatization on Mental health on Arrival in the Country of Resettlement. *Acta Psychiatry Scandinavia*, 88, 162-168.

Heath, C. (1945). What People Are. Cambridge Mass: Harvard University Press.

Hollifield, M., Warner, T.D., Lian, N., Krakow, B., Jenkins, J.H., Kesler, J., Stevenson, J., Westermeyer, J. (2002). Measuring trauma and health status in refugees: a critical review. *JAMA*, 288, 611-621.

Huppert, F.A., Whittington JE. (2003). Evidence for the independence of positive and negative well-being: implications for quality of life assessment.*Br J Health Psychol, 8*(Pt 1), 107-22.

Husni, M., Cernowsky, Z. Z.,Koye, N.,Haggarty, J. (2002). Sociodemographic correlates of assimilation of refugees from Kurdistan. *Psychological reports*, 90, 67-70.

Hussain, A., Weisaeth, L., Heir, T. (2011). Changes in religious beliefs and the relation of religiosity to posttraumatic stress and life satisfaction after a natural disaster.*Soc Psychiatry Psychiatr Epidemiol,46*(10), 1027-32.

IDMC, 2005 Internal Displacement Monitoring Center. (2006).*Global overview of trends and developments in 2006*. Norwegian Refugee Council, available at http://www.internal-displacement.org/

IDMC, 2008 Internal Displacement Monitoring Center. (2009).*Global overview of trends and developments in 2009*. Norwegian Refugee Council, available at http://www.internal-displacement.org/

IDMC, 2010 Internal Displacement Monitoring Center. (2011).*Global overview of trends and developments in 2011*. Norwegian Refugee Council, available at http://www.internal-displacement.org/

Global IDP Project. (2002). *Country report: Indonesia*. Can be downloaded at www.idpproject.org

Guiding Principles on Internal Displacement, Introduction of United Nations.(1998).

Indonesian Ministry of Manpower. (2000).*Annual Report*. Can be downloaded at www.nakertrans.go.id

Indonesia Statistical Body, BadanPusatStatistikRepublik Indonesia. (2006). *Statistics Indonesia.*Jakarta: BPS Press.

Indonesia Statistical Body, BadanPusatStatistikRepublik Indonesia. (2007). *Statistics Indonesia*. Jakarta: BPS Press.
Indonesia Statistical Body, BadanPusatStatistikRepublik Indonesia. (2008). *Statistics Indonesia*. Jakarta: BPS Press.

Indonesia Ministry of health. (2005) Annual Report. Can be downloaded at www.kesehatan.go.id

Indonesia Government Website (2008) downloaded at www.indonesia.go.id

Irwanto, Poerwandari, E. K., Prasadja, H., Sunarno , N., Hardee, K., Eggleston, E., et al. (1997). *In the shadow of men: reproductive decision-making and women's psychological well-being in Indonesia*. Final report. Jakarta: Center for societal development studies, Atma Jaya Catholic University and Research Triangle Park, NC: Family Health International.

Israel, B.A., Schulz, A.J., Parker,, E.A., Becker, A.B. (1998). Review of community-based research: Assessing partnership approaches to improve public health. *Annual Review of Public Health*, 19, 173-202

Israel, B.A., Schulz, A.J., Parker,, E.A., Becker, A.B., Allen, A., Guzman, J.R. (2003). Critical issues in developing and following community based participatory research principles. In M. Minkler& N. Wallerstein (Eds.), *Community Based Participatory for Health* (pp. 56-73). San Fransisco: Jossey Bass.

Jacob, K.S., Sharan, P., Garrido-Cumbrera, M., Seedat, S., Mari, J.J., Sreenivas, V., Saxena, S. (2007). Global Mental Health 4. Mental Health Systems in Countries: Where Are We Now?. *Lancet,* 370, 1061-77

Jahoda, M. (1998). *Current concepts of positive mental health*. New York: Basic books, Inc.

Jöreskog, K. G., Sörbom, D. (1996).*LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language*. US: Scientific software international, Inc.

Jöreskog, K. G., Sörbom, D. (1996). *PRELIS 2: User's Reference Guide: A Program for Multivariate Data Screening and Data Summarization; A Preprocessor for LISREL*. US: Scientific software international, Inc.

Keehn, R.J. (1980). Follow Up Studies of World War II and Korean Conflict Prisoners. *American Journal of Epidemiology*, 111, 194-211.

Kerlinger, F.N., Lee, H.B. (2000). *Foundations of behavioral research*. 4th ed. Forth Worth, Tex: Harcourt Brace Jovanovich College.

Kessler , R., Brewin, C., Galea, S. et al. (2006). Overview of baseline survey results: Hurricane Katrina community advisory group. Available
at:http://huricanekatrina.med.harvard.edu/pdf/baseline_report%208-25-06.pdf

Keyes, C.L., Westerhof, G.J. (2012). Chronological and subjective age differences in flourishing mental health and major depressive episode.*Aging Ment Health, 16(*1), 67-74.

Kinzie, J.D., Manson, S. (1993). Five years Experience with Indochinese Refugee Psychiatric Patients. *Journal of Operational Psychiatry*, 14, 105-111.

Kirmayer, L.J. (1996). Confusion of the senses: Implications of ethnocultural variations in somatoform and dissociative disorders for PTSD. In A.J. Marsella, M.J. Friedman, E.T. Gerrity& R,M, Scurfield (Eds.) *Ethnocultural Aspects of Posttraumatic Stress Disorder: Issues, research and clinical applications* (pp.131-163). Washington DC: American Psychological Association.

Klose, M., Jacobi, F. (2004). Can gender differences in the prevalence of mental disorders be explained by sociodemographic factors?*Arch Womens Ment Health, 7*(2), 133-48.

Kompas Cyber Media. (1999-2009). National Indonesia newspaper published articles on Ambon conflicts and other disasters in Indonesia are available at http://www.kompas.com/

Koning, J., Nolten, Rodenburg, Saptari. (2000).*Women and households in Indonesia*. Richmond: Curzon press.

Kulka, R.A., Schlenger, W.E., Fairbank, J.A., et al. (1990).*Trauma and The Vietnam War Generation*. New York: Brunner/Mazel.

Lavik, N.J., Hauff, E., Skrondal, A., Solberg, O. (1996). Mental disorder among refugees and the impact of persecution and exile: some findings from an out-patient population.*Br J Psychiatry*, 169(6), 726-32.

Lever, J.P. (2004). Poverty and Subjective Well Being in Mexico. *Social Indicators Researchs*, 68, 1-33.

Loeber, R., Burke, J.D., Lahey, B.B., Winters, A., Zera, M. (2000). Oppositional Defiant and Conduct Disorder: A review of the past 10 years, part I. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39, 1468-1484.

Lund, R., Stølen, K.A., Shanmugaratnam, N. (2003).*In the maze of displacement conflict, migration and change*. Kristiansand: Høyskoleforl.

Luthar, S.S., Cicchetti, D., Becker, B. (2002). The construct of resilience: a critical evaluation and guidelines for future work. *Child Development,* 71, 543-62

Marr, C. (1990). Uprooting People, Destroying Cultures: Indonesia's Transmigration Program. *Multinational Monitor*, 11 (10).
Marsella, A.J., Bornemann, T., Ekblad, S., Orley, J. (1994).*Amidst Peril and Pain: The Mental Health and Well Being of the World's Refugees*. Washington DC: American Psychological Association.

Marsella, A.J., Friedman, M.J., Gerrity, E.T., Scurfield, R.M. (1996). *Ethnocultural aspects of posttraumatic stress disorder: issues, research, and clinical applications*. Washington, D.C.: American Psychological Association.

Ministry of Transmigration and Population.(1999). *Country Report of Migration*. Jakarta: Depnakertrans.

Mollica, R.F., Caspi-Yavin, Y., Bollini, P., Truong, T., Tor, S., Lavelle, J. (1992). The Harvard trauma questionnaire. Validating a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in Indochinese refugees. *J NervMent Dis*, 180, 111-116.

Murali, V., Oyebode, F. (2004). *Poverty*, social inequality and *mental health*. *Advances in Psychiatric. Treatment*, 10, 216–224.

Norris, F.H., Murphy, A.D., Baker, C.K., Perilla, J.L., Rodriguez J. (2003). Epidemiology of trauma and posttraumatic stress disorder in Mexico. *Journal of Abnormal Psychology*, 112, 646-56.

Norris, F.H., Galea, S., Friedman, M.J., Watson, P.J. (Eds.) (2006). *Methods for Disaster Mental Health Research*. New York: The Guilford Press.

North, C.S., Nixon, S.J., Shariat, S., et al. (1999). Psychiatric disdorders among survivors of the Oklahoma City bombing. *JAMA*, 282, 755-762.

Patel, V., Pereira, J., Coutinho, L., Fernandes, R., Fernandes, J., Mann, A. (1998). Poverty, psychological disorder and disability in primary care attenders in Goa, India. *British Journal of Psychiatry*, 172, 533-536.

Patel V, Araya R, de Lima M, Ludermir A, Todd C. (1999). Women, poverty and common mental disorders in four restructuring societies.*Soc Sci Med, 49*(11), 1461-71.

Patel, V., Kirkwood, B.R., Pednekar, S., Weiss, H., Mabey, D. (2006). Risk factors for common mental disorders in women. Population-based longitudinal study. *Br J Psychiatry*, 189, 547-555.

Patel, V., Kleinman, A. (2003). Poverty and common mental disorders in low-income countries. *Bull World Health Organ*, 81, 609-615.

Peacock, J.L. (1973). *Indonesia: an anthropological perspective*. Pacific Palisades CA: Goodyear.

Pfefferbaum, B., Gurwitch, R.H., McDonald, N.B., et al. (2000). Posttraumatic stress among young children after the death of a friend or acquaintance in a terrorist bombing. *PsychiatrServ*, 51, 386-8.

Porter, M., Haslam, N. (2005).Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons. A meta-analysis. *JAMA*, 294, 602-612.

Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Philips, M.R.,Rahman, A. (2007). Global Mental Health 1. No Health Without Mental Health. *Lancet*, 370, 859-77.

Pynoos, R., Frederick, C., Nader, K., Arroyo, W., Steinber, A., Eth, S., et al. (1987). Life threat, timing, duration and course. *Journal of Gerontology,* 44, 207-217.

Quarentelli, E.L. (1985). An assessment of conflicting views on mental health: the consequences of traumatic events. *In Trauma and its Wake*, ed. C.R. Figley, pp. 173-215. New York: Brunner/Mazel.

Raphael, B., Lundin, T., Weisaeth, L. (1989). A research method for the study of psychological and psychiatric aspect of disaster. *ActaPsychiatricaScandinavica*, suplementum no.353, 80.

Richardson, G.E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, 58, 307-21.

Rubonis, A.V., Bickman, L. (1991). Psychological impairment in the wake of disaster: the disaster-psychopathology relationship. *Psychological Bulletin*, 109, 384-99.

Ryan, R.M., Deci, E.L. (2001). On happiness and human potentials: a review of research on hedonic and eudaimonic well-being.*Annu Rev Psychol, 52*, 141-66.

Sack, W.H. (1985). Post-traumatic Stress Disorder in Children. *Integrated Psychiatry*, 3, 162-164.

Sandanger, I., Nygard, J.F., Sorensen, T., Moum, T. (2004). Is women's mental health more susceptible than men's to the influence of surrounding stress? *Soc Psychiatry PsychiatrEpodemiol*, 39, 177-184.

Saraceno, B., Barbui, C. (1997). Poverty and mental illness. *Can J Psychiatry*, 42, 285-290.

Sareen, J., Afifi, T.O., McMillan, K.A., Asmundson, G.J. (2011). Relationship between household income and mental disorders: findings from a population-based longitudinal study.*Arch Gen Psychiatry, 68*(4), 419-27.

Savin, M.D., Sack, W.H., Clarke, G.N., Meas, N., Richart, I.M. (1995). The Khmer Adolescent Project: III. A Study of Trauma from Thailand's Site II Refugee Camp. *Journal American Academic Child Adolescent Psychiatry*, 35, 384-391.

Saxena, S., Thornicroft, G., Knapp, M., Whiteford, H. (2007). Global Mental Health 2. Resources for Mental Health: Scarcity, Inequity, and Inefficiency. *Lancet*, 370, 879-89.

Seligman, M.E.P., Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55, 5-14.

Shanmugaratnam,N.,Lund,R.,Stølen,K. A. (2003). Introduction: Conflict, Migration and Change. In Shanmugaratnam, N., Ragnhild Lund & Kristi Anne Stølen (eds.). *In the Maze of Displacement. Conflict, Migration and Change*. Høyskoleforlaget, Oslo, pp. 8 - 23.

Shen, Y.C., Zhang, M.Y., Huang, Y.Q., He, Y.L., Liu, Z.R., Cheng, H., Tsang, A., Lee, S., Kessler, R.C.(2006). Twelve-month prevalence, severity, and unmet need for treatment of mental disorders in metropolitan China.*Psychol Med, 36*(2), 257-67.

Shore, J.H., Vollmer, W.M., Tatum, E.L. (1989). Community patterns of posttraumatic stress disorders. *Journal of Nervous and Mental Disease,* 177, 681-685.

SPSS Inc. (2005). Statistical package for the social sciences (computer software program).

Schweitzer, R., Melville, F., Steel, Z., Lacherez, P. (2006). Trauma, post-migration living difficulties, and social support as predictors of psychological adjustment in resettled Sudanese refugees.*Aust N Z J Psychiatry, 40*(2), 179-87.

Scientific Software International Inc. (2004).*Interactive Lisrel for MS windows operating systems.*

Statistic of LAPPAN. (2005). Unpublished statistic of LAPPAN NGO in Ambon.

Steel, Z., Silove, D., Chey, T., Bauman, A., Phan, T., Phan, T. (2005). Mental disorders, disability and health service use amongst Vietnamese refugees and the host Australian population.*Acta Psychiatr Scand.*, 111(4), 300-9.

Steel, Z., Silove, D., Giao, N.M., Phan, T.T., Chey, T., Whelan, A., Bauman, A., Bryant, R.A. (2009). International and indigenous diagnoses of mental disorder among Vietnamese living in Vietnam and Australia.*Br J Psychiatry*,194(4), 326-33.

Stein, B.D., Kataoka, S., Jaycox, L.H., Wong, M., Fink, A., Escudero, P., Zaragoza, C. (2002). Theoretical basis and program design of a school-based mental health intervention for traumatized immigrant children: a collaborative research partnership.*J Behav Health Serv Res.*, 29(3), 318-26.

Surveisosialekonominasional. (2003).*Indonesia's national socio-economic survey*. Jakarta: National Statistical Body.

Surveisosialekonominasional. (2005).*Indonesia's national socio-economic survey*. Jakarta: National Statistical Body.

Tennant, R., Joseph, S., Stewart-Brown, S. (2007). The Affectometer 2: a measure of positive mental health in UK populations.*Qual Life Res, 16*(4), 687-95.

Thabet, A.A.M., Vostanis, P. (1998). Social adversities and anxiety disorders in the Gaza strip. *Arch Dis Child*, 78, 439-442.

Thapa, S.B., Hauff, E. (2005). Psychological distress among displaced persons during an armed conflict in Nepal. *Soc Psychiatry PsychiatrEpidemiol*, 40, 672-679.

Turnip, S.S., Hauff E. (2007). Household roles, poverty and psychological distress in internally displaced persons affected by violent conflicts in Indonesia. *Social Psychiatry and Psychiatric Epidemiology, 42,* 997-1004.

United Nations Development Program. (2006). *www.undp.org*

UNHCR. (2005). Guiding Principles on Internal Displacement. *Refugee Survey Quarterly*, 24 (3), 197-205.

Ursano, R.J., Fullerton, C.S., Weisaeth, L., Raphael, B. (2007).*Textbook of disaster psychiatry*.UK: Cambridge University Press.

Vaage, A.B., Thomsen, P.H., Silove, D., Wentzel-Larsen, T., Van Ta, T., Hauff, E. (2010). Long-term mental health of Vietnamese refugees in the aftermath of trauma.*Br J Psychiatry, 196*(2), 122-5.

Van Ommeren, M., Thapa, S., Makaju, R., Prasain, D., Bhattarai, R., De Jong, J.T. (1999). Preparing instruments for transcultural research: use of the translation monitoring form with Nepali speaking Bhutanese refugees. *Transcult Psychiatry*, 36, 285-301.

Vaillant, G.E. (1977). *Adaptation to Life*. Boston: Little Brown.

Vaillant, G. E. (2003). Reviews and overviews: Mental health. *American Journal Psychiatry*, 160, 1373-1384.

Vazquez-Barquero, J.L., DiezManrique, J.F., Munoz, J., et al. (1992). Sex differences in mental illness: a community study of the influence of physical health and sociodemographic factors. *Soc Psychiatry PsychiatrEpidemiol*, 27, 62-68.

Wand, T. (2010). Mental health nursing from a solution focused perspective.*Int J Ment Health Nurs, 19*(3), 210-9.

Weine, S., Becker, D., McGlashan, T., Vojvoda, D., Hartman, S., Robbins, J. (1995). Adolescent Survivor of "Ethnic Cleansing" : Observations on the First Year in America. *Journal American Academic Child Adolescent Psychiatry*, 34, 1153-1159.

Westermeyer, J. (1985). Psychiatric diagnosis across cultural boundaries. *Am J Psychiatry*, 142, 798-805.

Westermeyer, J. (1986). Planning mental health services for refugees. In C. Williams & J. Westermeyer (Eds.). *Refugees' mental health issues in resettlement countries*. New York: Hemisphere.

Westermeyer, J., Janca, A. (1997). Language, Culture and Psychopathology: Conceptual and Methodological Issues. *Transcultural Psychiatry*, 34, 291-311.

WHO. Internally Displaced Persons, Health and WHO. (2000). Paper presented at the Humanitarian Affairs Segment of ECOSOC 2000, New York

World Health Organization. (2001).*The world health report 2001. Mental health: new understanding, new hope*. Geneva: WHO.

www.worldbank.org

Yesavage, J.A. (1983). Dangerous behavior by Vietnam veterans with schizophrenia. *American Journal of Psychiatry,* 140, 1180-83.

ANNEX

Reflections on the Dissemination of Study Results in a Community Meeting and Seminar One Year After the Final Data Collection

About one year after the second data collection (T2), we returned to Ambon Island to conduct two seminars. We intended to disseminate the results of the study to health care personnel and to study respondents. The seminars were held on January 9, 2008; the first one in the morning was for health care personnel, and the community meeting in the afternoon was for the respondents in the study.

The morning seminar for health care personnel

We invited about 50 personnel from the provincial and district health offices in the province of Maluku, personnel from all of the primary health care centers in the areas where our respondents lived, and some media. The main purpose of the seminar was to inform the health authorities of our findings about the mental health situation and needs of the community in their catchment areas. We hoped that the seminar would raise the health authorities' awareness of mental health-related problems in their communities and thus lead to provision of a better service.

After the presentation of the research results, participants discussed the relevance of the study to the situation in their primary health care offices. Some participants shared their experiences treating patients with mental health problems after the conflict period. They noticed that some patients presented without any clear complaints, and explained how they were able to identify the interaction between physical health and stress. A nurse told us about one of her patients: a mother who was in labor and had very high blood pressure. The

doctor gave her medication to lower her blood pressure, but none of the drugs worked. The nurse then talked to the mother and found out that she was stressed by the hospital fee. Her blood pressure returned to normal only after she was assured that the fee was to be paid by a donation.

Another topic of discussion was the mental health services that primary health care can provide for the community. Some of the participants felt the need to improve their services but perceived that they needed assistance to do so. Few primary health care personnel in Maluku have undergone training in mental health. They often have problems identifying mental health needs and differentiating patients with mental health problems from those with only physical complaints. However, almost all patients initially present to the primary health care provider with physical complaints, which makes it more difficult for health care personnel to differentiate between patients with mental health needs and those with only physical needs. Financial constraints were the main limitation to improving services for most primary health care providers. They lacked the funds to send their staff to the necessary training or to provide extra services in primary health care.

Primary health care providers are also required to deliver the vast programs of the national and provincial health offices, which seem to occupy most of their time. Although mental health was also one of the programs, it did not receive enough attention, because most personnel working in primary health care have little knowledge about mental health. We encouraged them to try a simple and nearly cost-free program to support the community with mental health services. We proposed that each primary health care provider could assign a nurse to act as an active listener to the patients. We offered the suggestion that the doctor may refer those patients who present frequently with the same physical complaints that cannot be healed by regular medicine to these nurses. We also

encouraged the doctors to familiarize themselves with psychotropic drugs, because they are available in the primary health care setting. Many general practitioners who work in primary health care often hesitate to dispense such medicine, despite the patient's needs. Because mental health is one of the programs to be delivered at the primary health care level, we encouraged the health care personnel to become more active by taking the initiative to learn about mental health. Another challenge for improving mental health services was the stigma in the community about mental illness. The health care personnel realized that there was a need for public education about mental health. However, the limitations in funding, knowledge, and time made them unable to promote the dissemination of correct information about mental health in order to fight the stigma.

The discussion then moved to the topic of the mental health needs of communities living in the catchment areas of the primary health care providers that participated in the seminar. We presented the most common problem experienced by the community and identified the vulnerable groups. The health care personnel discussed the mental health problems that they had seen among their patients, such as depression and psychosis. They then discussed how they could improve their services and address the needs of the vulnerable groups.

The afternoon community meeting for the study's respondents

We invited about 100 persons to the afternoon seminar, and about 75 persons attended. We could not invite all of the participants because of limited space in the seminar venue, so we invited about eight participants and two village coordinators from each study location. We asked the participants to select eight persons with different demographic characteristics to represent the young, old, female, and male participants.

The participants were excited to listen to the presentation of the study results. They asked many questions during the presentation whenever they were uncertain about something or to ask for clarification. The meeting was interactive and not just a one-way communication from presenter to the participants.

Our first impression of the participants was that they had changed somewhat from the previous year, when the researchers had last met them. In general, they looked more energetic, and they smiled as they arrived at the seminar. At the opening, the participants told us that Ambon Island had changed much in the past year. It was busier and full of life, and the people were more optimistic that life would be better in the future. The participants felt that, despite the conflict in the past, life must go on. The theme of "life must go on" was implemented in many different ways in the participants' lives, as explained below.

Improvement in life and living conditions in the past year

Some of the participants said that they had moved to different and more permanent housing facilities. The housing compound was not very pleasant initially. There was no running water, sewage system, electricity, or school in the vicinity, and the roads and transportation were insufficient. However, these limitations forced the inhabitants to be creative to ensure their survival; they knew and accepted that life must go on. They worked together to improve the quality of the road and asked the city to provide more minibus services to their area. They then approached the relevant office to ask for a school to be built, after identifying the number of school-aged children in the neighborhood. They built a place for everybody to collect water and made regulations to maintain the facility.

The participants felt they became more independent and empowered after they left the camp and moved into their new houses. Although the condition of the housing

compound was poor, and the location was far from the city center, the participants claimed that they were happier and experienced less stress living in the new compound. They had had no privacy when living in the camps, with only a blanket as a separator between families. They were happy because, in their new houses, they now had privacy, and this helped them feel that they had returned to a "normal" life. The participants who had moved encouraged those who still lived in the camps to find a new place as soon as possible, regardless of the amount of financial support offered by the government. Moving to houses also motivated the participants to start over to find a new and better life. They used to feel helpless to control the future, but after moving, they felt that they could again plan for the future.

However, the participants mentioned that they had to force themselves to explore all possibilities to find jobs. Some had decided to do blue-collar jobs that they had never imagined before, such as selling fish or vegetables from house to house, or riding a *becak* (a traditional means of transportation). These kinds of jobs were usually considered "dirty" and appropriate only for uneducated people who came from outside the province. During the conflict period, many migrant workers left Maluku and their jobs. Therefore, after the conflict ended, there was a need for people to work in these blue-collar jobs. Although people in Maluku found it difficult initially, they were willing to do those jobs.

Some comments about the study findings: Are we crazy?

Most of the participants who came to the seminar asked one important question about their sanity. The question was not asked in a pessimistic way; instead, they seemed to be genuinely curious about their mental health condition. Just before we started the presentation, one participant raised her hand and asked us the question, "So, what have you found out about us? Are we all crazy?" The question immediately made all participants laugh

and lifted the atmosphere of the seminar. We replied that the participants could decide the answer to that question by themselves at the end of the meeting.

The participants were enthusiastic when shown the results about their stress levels across different household roles and genders. The women immediately agreed with the finding that the prevalence of mental distress was highest among “mothers” and lowest among “fathers”. The women shared their thoughts about possible explanations for these results. The burden of domestic chores was very high, and the hardship in dealing with children and a husband was mentioned. The women felt that they should single-handedly deal with the school-related problems of their children without any help from their husband. Women were expected to find ways to provide food for the family without a sufficient amount of money to buy the raw materials. To do so, they earned extra income by providing services to somewhat “richer” people. They washed people’s clothes or sold fish and vegetables door to door. Sometimes, the women planted vegetables for family consumption.

The men were also enthusiastic about discussing the findings. They said that, despite the lower prevalence of distress among men compared with women, men experienced much stress. Some male participants shared that it is difficult for men to admit to having problems. They found it almost impossible to share their feelings and distress with others. Therefore, the men left their houses when feeling stressed, and went to drink with friends. The women responded to this openness, saying that a man should learn to trust and share with his wife instead of running away from the house when stressed. That way, they could work together to ease each other’s problems.

Normalization of living conditions has changed the sources of daily hassles. Participants did not worry as much about safety or other conflict-related issues as they had the year before; instead, they focused more on daily living issues. One participant, a young

man, was concerned about the availability of jobs in Ambon Island. He was also concerned that his employment status would affect his ability to find a girlfriend and potential wife. These examples showed that the participants, who once were IDPs and lived in camps, have shifted their worries from conflict-related issues to matters resembling those of concern to the general population in Indonesia.

After we presented the results on positive mental health, the participants expressed their surprise and happiness to hear that they had the strength from within to deal with all the problems in the post conflict situation. A mother said that the results confirmed that she is a strong person, and everybody agreed. She encouraged the participants to work harder and organize a self-help group in the community to encourage each other in times of hardship. A young woman said that it is important for the IDPs to realize that every person has a mechanism to fight the stress and problems in life, as shown by the study results.

The next thing we discussed in the meeting was the impact of parental factors on adolescents in the community. The results showed that adolescents' mental health was strongly associated with their parents' mental distress and physical health. Both the women and men said child rearing was more complicated after the conflict period. The mother of a teenager worried about the way parents were rearing their teenage children. The discussion also focused the possibility of the community creating a positive environment for its adolescents. They suggested that the community should start an activity group where all adolescents could come to spend their time. This activity would also give extra attention to adolescents whose parents have health problems.

The last topic for discussion in the meeting was the cost of the violent conflict for the communities in Ambon Island in general and for the communities that participated in the study in particular. We found that both Muslims and Christians in the community had

suffered a great deal in this conflict. The levels of mental distress and poverty were similar for the Muslim and Christian IDPs who participated in the study. The participants agreed fully with this finding. They said that they had had to endure all the difficulties in the camps and relocation areas, and that they believed their counterparts would have endured the same difficult situations. The participants also expressed their gratitude that the violent conflict was over and stated that they would not let another conflict occur in Maluku.

Almost all of our participants had also participated in another study after the conflict in Maluku. However, ours was the only one that informed them of the results; therefore, they were very excited about attending the meeting. We received much feedback from the respondents. In general, they conveyed their appreciation for the researchers and for the University of Oslo for arranging the community meeting, and invited us to return if we wish to conduct a follow-up study.

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CONFLICT AND HEALTH

RESEARCH Open Access

The mental health of populations directly and indirectly exposed to violent conflict in Indonesia

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Abstract

Background: Large disasters affect people who live both near and far from the areas in which they occur. The mental health impact is expected to be similar to a ripple effect, where the risk of mental health consequences generally decreases with increasing distance from the disaster center. However, we have not been able to identify studies of the ripple effect of man-made disaster on mental health in low-income countries.

Objectives: The objective was to examine the hypothesis of a ripple effect on the mental health consequences in populations exposed to man-made disasters in a developing country context, through a comparison of two different populations living in different proximities from the center of disaster in Mollucas.

Methods: Cross-sectional longitudinal data were collected from 510 Internally Displaced Persons (IDPs) living in Ambon, who were directly exposed to the violence, and non-IDPs living in remote villages in Mollucas, Indonesia, who had never been directly exposed to violence in Mollucas. Data were collected during home visits and statistical comparisons were conducted by using chi square tests, t-test and logistic regression.

Results: There was significantly more psychological distress "caseness" in IDPs than non-IDPs. The mental health consequences of the violent conflict in Ambon supported the ripple effect hypothesis as displacement status appears to be a strong risk factor for distress, both as a main effect and interaction effect. Significantly higher percentages of IDPs experienced traumatic events than non-IDPs in all six event types reported.

Conclusions: This study indicates that the conflict had an impact on mental health and economic conditions far beyond the area where the actual violent events took place, in a diminishing pattern in line with the hypothesis of a ripple effect.

Background

A number of factors have been identified as having an impact on the mental health of populations affected by disasters [1-3]. The geographical distance from the centre of the disaster is one of the factors that is likely to influence such an impact. This has been described as the ripple effect of a disaster, and posits that mental health problems spread outward from the center of disaster in a diminishing ripple pattern [4-6]. Disaster spatial zones describe the area at the center of disaster as "area totally destroyed", the immediate area around the disaster center as "partially destroyed area", and the area adjacent to the impact area as the "filter zone" [7]. In populations, exposure level is a fundamental determinant of the mental health effects of disasters [8,9]. Previous studies indicate that those directly exposed to severe incidents are likely to have the highest risk of PTSD and other psychiatric problems [10], and the risk of mental health consequences generally decreases with increasing distance from the disaster agent and decreasing exposure of affected individuals [11].

Man-made disasters often cause more frequent and more persistent psychiatric symptoms and distress than natural disasters [12]. Man-made disasters with a high degree of community destruction, and those in developing countries, are associated with the worst outcomes [13]. A meta-analysis of mental health of displaced persons indicated that internally displaced persons and those who fled due to unresolved conflict were most affected and had the worst mental health outcomes compared to the refugees lived in developed countries [14].

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However, most studies on the mental health consequences of disaster have been of natural disasters. They showed that the impact on populations in third world countries differs depending on the proximity to the disaster center [1-3,15]. We have not been able to identify any studies of the impact of man-made disasters on the mental health of indirectly exposed communities in low-income countries. Such information is important in order to assess which populations segments that are in need of different types of assistance.

The present study investigates the impact of long-term violent conflict in Mollucas, Indonesia. The violence, which is believed to be related to religious conflicts between Moslems and Christians, lasted for six years (1999-2005). It spread from its origin in Ambon city to other islands but did not reach a small number of villages in neighboring islands. Although these remote villages were never exposed to direct violence from the Mollucas conflict, reports showed that the non-IDPs living there were affected by it. Indirect effects, such as shortages of life supplies, unavailability of health care, lack of education for children, unverified news related to the conflict and difficulties commuting to other islands and villages due to transportation shortages, were some of the major problems [16]. This paper aims to investigate the hypothesis of a ripple effect on the mental health of populations exposed to violent conflicts by comparing two different populations, namely internally displaced persons (IDPs) who lived in Ambon and were directly exposed to the violence and those who lived in remote villages that had never been directly exposed to violence (non IDPs). We hypothesized that the non-IDPs in remote villages experienced the violent conflict in a pattern in line with the ripple effect, indicated by lower level and lower prevalence of distress, less traumatic experiences and better economic conditions than IDPs living in Ambon. We also hypothesized that there would be different risk factors of distress in both communities.

Methods

Study design

This study used cross-sectional data, which were collected as part of a longitudinal study. We compared data from IDPs and non-IDPs, two different types of communities in Ambon, Indonesia, with different proximities to the violent conflict. IDPs data were collected in a longitudinal community based study on Ambon Island over two consecutive years (2005-2006). For this paper, we used data recorded in the second data collection, which was conducted from August to October 2006, and compared it with non-IDPs data collected in September 2006. Ethical clearance was obtained from the Faculty of Psychology, Universitas Indonesia.

Procedure

Lists of households were requested and obtained from each resettlement and village leader. We randomly selected 471 participants from each list. Details of the randomized sampling procedure used in the study are explained in a previous paper [17]. Local assistants, who were IDPs themselves, underwent specific training for the project and collected the data during home visits. After giving informed consent, the respondents were asked to fill in the questionnaires by themselves, in the presence of an assistant in case the respondent had any questions regarding the items. If a respondent was not capable of completing the questionnaire on his or her own, the assistant would help by reading each item aloud to the respondent and writing down their responses.

Sample

IDPs participant

The inclusion criteria were IDPs living on Ambon Island during and after the violent period who were over 18 years of age and had sufficient competency in Bahasa Indonesia. The exclusion criteria were having a hearing problem, mental retardation or dementia (psychologists' assessment).

Ten locations were selected, based on their accessibility by transportation means from Ambon city, from approximately 85 camps and relocation areas with different living conditions (three temporary camps, two independent relocation areas, three supported relocation areas and two IDPs old land areas) to ensure that all types of IDPs resettlements on Ambon Island were represented. We approached 471 subjects who participated in the first data collection, and 399 subjects agreed to take part in the second data collection in 2006 (83%).

Non-IDPs participant

The communities that lived in areas that had never been exposed directly to violent conflict in Mollucas were called non-IDPs. These areas have never been the scene of violent conflicts and therefore do not have any IDPs, probably due to the homogeneity of religion among the inhabitants. A cross-sectional data collection was carried out in Buru and Saparua Islands in the archipelago of Mollucas province in September 2006. Both islands are located approximately 300-400 kilometers from Ambon, and it took up to 15 hours to reach them with ferries and cars. One village was chosen from each island; Booi village on Saparua Island, and Kayeli village on Buru Island. Those two villages were selected because there had not been had any incident related to the Mollucas conflict within the village, less than 5% of their inhabitants had participated actively in the Mollucas conflict outside their own village (according to information from local district and village leaders), and they were

geographically accessible by public transportation. Inclusion criteria for participants were that they had lived in the selected villages during and after the violent period (in the past six years), were over 18 years of age, had never been actively involved in the Mollucas violent conflicts, were sufficiently competent in Bahasa Indonesia, and did not have hearing problems, mental retardation or dementia (psychologists' assessment). We collected the names of the villagers from the village leaders and randomly picked 120 participants in both villages. Of the 120 people we approached, 111 agreed to participate in the study (93%).

Measures

Demographic section

This section measured basic demographic information including age, gender, education, displacement status, marital status, religion and address. The map of the study area is presented in Figure 1.

Psychological distress

The Hopkins Symptoms Check List-25 (HSCL-25) was used to measure psychological distress in the past week [18]. Items are rated on a scale ranging from 1 (not at all) to 4 (extremely). This instrument has been widely used in studies of forced migrants in different countries [19], including IDPs in low-income countries [19]. We used the conventional criteria for determining "caseness" on the HSCL-25 measure; a score ≥ 1.75 was taken as an indication that the person probably needed a further diagnosis of psychological distress [20-22]. The details of the cultural validation of the HSCL-25 in the Indonesian setting have been described in another paper [17].

Sense of Coherence

The Sense of Coherence (SOC) is used as an indicator of resiliency. The SOC is a generalized, long-lasting view one has of the world and of living in the world. This concept has three aspects: comprehensibility, manageability and meaningfulness [23,24]. Some comparable concepts associated with resiliency were "hardiness" from Kobasa, "sense of permanence" from Boyce Thomas, domains of social climate from Rudolf Moos, and family's construction of reality from David Reiss [23].

We used the short version of the Sense of Coherence questionnaire (SOC), which consists of 13 items. The SOC scale is a seven-point semantic differential Likert scale. Conventionally, each item is scored from 1 to 7 for "positively" formulated items, with "negatively" formulated items scored reversely. The scores are then added to get the SOC score; a higher score indicates higher SOC [23]. The SOC 13 has been used in low-income countries and in postwar settings [24,25]. Before collecting the data, we conducted a cultural validation using the translation monitoring form [26]. The process includes the translation and back translation by different persons followed by comparison of the two translation results by a bilingual mental health professional, evaluation of the local language translation by focus group discussion of lay people and pilot study. In this study, a five-point scale was chosen because it was strongly advised by participants of the focus group discussion (FGD) during the cultural validation. The sum of all items was then multiplied by 7/5 to make the total score comparable to other results [24]. This cultural validation process ensured the relevance and meaningfulness of the sense of coherence concept in the local culture in Mollucas. Preliminary interviews with traditional leaders showed that Mollucans believed in their ability to rebound from difficulties. A Mollucan was described to have similarities with the sago tree: rough outside but white inside. This symbol represents the characteristics of Mollucans as being tough and resilient with purity and sincerity at heart [27].

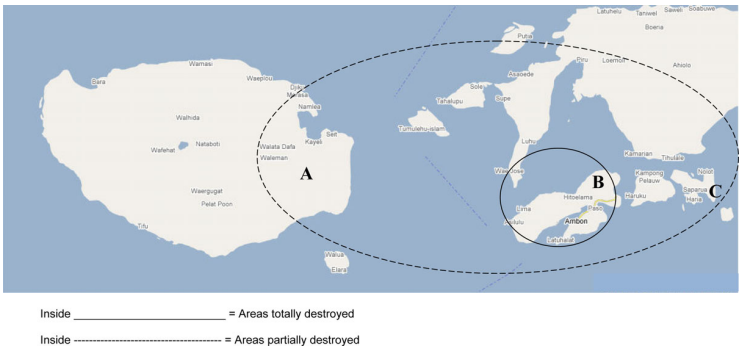

Figure 1 Violent conflict spatial zones in Ambon, Buru and Saparua Islands. A: Kayeli village in Buru Island. B: Ambon city in Ambon Island. C: Booi village in Saparua Island

Traumatic experiences

Participants were asked about their traumatic experiences during the conflict period. The questions were derived from the most common traumatic experiences among IDPs in Ambon: witnessing murder, feeling that one's life was ever in danger, witnessing violence toward people and/or property, having a close family member who died due to the conflict and being injured herself/himself due to the conflict. Those experiences were identified through several focus group discussions (FGD) and interviews with IDPs in Mollucas. All of the questions were formulated as 'yes' or 'no' questions.

Economic conditions

We developed our socioeconomic and demographic questionnaire in Ambon, based on the indicators from the National Socio Economic Survey in Indonesia [28]. The poverty level was measured by three variables. The first was a structural variable that consisted of five items comprising educational level, disruption at school during the conflict period, employment status and income and gifts received from outside the household in the past three months. The second was a consumption variable that consisted of five food items and four nonfood items designed to differentiate between the well-off and the poor. The last was an asset ownership variable that consisted of the 10 items that best defined one's socioeconomic status in the local setting. The details of development of this instrument are given in a previous paper [17].

Statistical analysis

We conducted chi square tests to identify differences in demographic characteristics and traumatic experiences with respect to displacement status. In order to identify differences in distress scores and economic condition indicators, we conducted independent group *t*-tests between IDPs and non-IDPs. Since we had the IDPs data from two consecutive years, we also conducted paired group t-tests within the IDP group on those two occasions. Proportions of distress "caseness" were compared between IDP and non-IDPs through logistic regression analysis with psychological distress (case vs. noncase) as the dependent variable, and the status (IDPs vs. non IDPs) as independent variable.

The focus was the association between displacement status and psychological distress. Various background factors were considered to be potential confounders and adjusted for. We entered the background factors as independent variables one by one into bivariate regression analysis and retained all variables that were significant at $p \leq 0.1$ for the multiple regression analyses. Then all possible interactions and non-linearities were assessed and also retained for multiple regression analysis at $p \leq 0.1$. Model selection was done by comparing different combinations of covariates in a stepwise fashion and choosing the best-fit model. Only significant terms were kept in the final model. We used SPSS version 14 for statistical analysis. All significance tests were two-sided with significance levels of 0.05 [29].

Results

Demographic characteristics and traumatic experiences report

The numbers of female and male participants in both IDPs and non-IDPs groups were almost equal. The participants in the IDPs group were 19-81 years, with a mean age of 39 years (SD = 14.2), and participants in the non-IDPs group were 18-79 years, with a mean age of 43 years (SD = 16.2). There was a significantly higher percentage of Christian participants in the non-IDP group than in the IDPs, and a significantly larger percentage of IDPs participants had a higher level of education than non-IDPs participants. There was significantly higher percentage of married people among the non-IDPs compared to the IDPs. Other demographic characteristics of the participants are presented in Table 1.

The comparison of the number of IDPs and non-IDPs participants who experienced traumatic events is presented in Table 2. Significantly higher percentages of IDPs experienced each of the six kinds of traumatic events reported than non-IDPs. The largest difference was that more than half of the IDPs group reported having witnessed violence toward property while only 4% of the non-IDPs group had. The traumatic event most commonly reported by IDPs and non-IDPs was feeling threatened. The event least commonly reported by IDPs

Table 1 Demographic characteristics of communities affected directly and indirectly by violent conflict in Mollucas

	IDPs (%) *N* = 399	Non-IDPs (%) *N* = 111	χ^2	*p*
Gender				
Female	235 (59)	59 (53)	1.174	0.279
Male	164 (41)	52 (47)		
Age				
< 30 years	118 (30)	27 (24)	1.176	0.278
≥ 30 years	281 (70)	84 (76)		
Religion				
Christian	224 (56)	78 (70)	7.179	0.007
Moslem	175 (44)	33 (30)		
Education				
< 9 years	144 (36)	60 (54)	11.179	0.001
≥ 9 years	255 (64)	51 (46)		
Marital status				
Married	304 (76)	94 (85)	129.40	< 0.001
Not married	95 (24)	17 (15)		

Table 2 Comparison of traumatic experiences between communities affected directly and indirectly by violent conflict in Mollucas

	IDPs (%) *N* = 399	Non-IDPs (%) *N* = 111	χ^2	*p*
Threat	361 (77)	46 (41)	52.944	< 0.001
Injured	42 (9)	3 (3)	4.863	0.027
Witnessed murder	135 (29)	1 (1)	38.662	< 0.001
Witnessed violence toward people	181 (38)	5 (5)	47.543	< 0.001
Witnessed violence toward property	238 (51)	4 (4)	81.437	< 0.001
Family death	208 (44)	19 (17)	27.616	< 0.001

was being injured in the conflict, while in the non-IDPs group the least experienced event was witnessing murder.

Mental health and economic conditions

The mean score of psychological distress in 2006 for the total sample was 1.68 (SD = 0.46). The comparison of mental health indicators and economic conditions between IDPs and non-IDPs is presented in Table 3. There was no significant difference in crude distress level between IDPs and non-IDPs. We had data for the IDPs distress score one year previously, which was 1.78 (SD = 0.50), significantly different from the distress level of both IDPs and non-IDPs in 2006 (p = 0.001 and < 0.001 respectively). In the non-IDPs group there was no significant gender difference in psychological distress (p = 0.085). The distress mean scores for females were 1.66 (SD = 0.47) and for males were 1.56 ([SD = 0.43). In the IDPs group, females had significantly higher distress levels than males (p < 0.001), where the distress mean scores were 1.78 [SD = 0.47] and 1.58 [SD = 0.44] respectively.

There was significantly more "caseness" of psychological distress in IDPs than in non-IDP (OR = 1.6, p = 0.042) as presented in Table 4. There was no significant difference in sense of coherence between IDPs and non-IDPs.

Economic conditions of non-IDPs were significantly better than IDPs with regard to the structural and asset ownership variables (p < 0.001 for both variables), and there was no significant difference in consumption between IDPs and non-IDPs.

Risk and protective factors of distress

The regression model explained 23.6% variance of psychological distress (Table 5). The variable with the largest contribution to explained variance was SOC (6.7%), followed by gender (3.9%) and status of being IDPs or non-IDPs (2.8%). Being IDPs was a risk factor for distress, while higher SOC was a protective factor. Other risk factors for distress were being female, not being married (single and widowed), owning fewer assets and feeling that one's life was in danger. Interaction between lower SOC and lower number of assets was a significant risk factor for distress. Significant interactions were found between SOC and asset ownership, asset ownership and displacement status, and marital status and displacement status. Owning fewer assets and not being married showed a stronger negative association with the distress levels of IDPs than non-IDP. IDP with fewer assets were more distressed than non-IDPs with fewer assets (Figure 2, upper panel) and IDP who were not married were at an higher risk of distress than their married counterparts and non-IDPs (Figure 2, lower panel)

Discussion

The ripple effect of violent conflict

Our study found that the prevalence of psychological distress in a population indirectly affected by violent conflict was significantly lower than in a population in the same region that was directly affected. This confirmed our hypothesis that there would be a ripple effect of disaster across different proximities to violent conflict; our findings revealed that people who lived in

Table 3 Comparison of mental health indicators and economic conditions between communities affected directly and indirectly by violent conflict in Mollucas

	IDPs mean scores (*SD*)	Non-IDPs mean scores (*SD*)	Range of scores	*p*
Psychological distress	1.70 (0.47)	1.62 (0.46)	1-4	0.112
Sense of coherence	65.3 (9.5)	65.7 (10)	18-91	0.682
Structural variable	13.3 (4.6)	14.7 (2.3)	2-24	< 0.001
Consumption variable	10.3 (4.5)	10 (3.9)	0-22	0.370
Asset ownership variable	12.2 (6.3)	15.5 (7.1)	0-31	< 0.001

Table 4 Prevalence and odds ratio of distress cases among communities affected directly and indirectly by violent conflict in Mollucas

	IDPs (*N* = 399)	Non-IDPs (*N* = 111)	*p*
Distress "caseness"			
Frequency	165	34	0.041
Percentage	41	30	
Odds ratio	1.6	1	0.042
95% CI	1.1-2.5		

Notes
CI: Confidence interval

exposed areas had higher distress levels, which was in line with the results of other studies [4-6,30]. Figure 1. presents the map of areas affected by the violent conflict in Mollucas province. The results supported our hypothesis that non-IDPs experienced less traumatic events than IDPs. However, because four in ten participants felt that their lives were threatened, and one in eight had lost a close family member, the consequences of the violence for the non-IDPs was still considerable. These events can be experienced regardless of one's physical proximity to the conflict. Non-IDPs were still exposed to the conflict by news delivered to them by television and radio stations, newspapers, relatives living in Ambon and people who had traveled to the area of conflict. Exposure through various media can lead to the perception of frightening and life-threatening events when an individual personalizes the events or views themselves as a potential victim [31,32].

The hypothesis of a ripple effect on the economic conditions was partially confirmed. The non-IDPs had significantly higher levels of structural resources and asset ownership than the IDPs. The non-IDPs lived in conflict-free areas, so their houses, land and other assets stayed intact. On the other hand, most of the IDPs had

Table 5 Multiple regression analysis of risk factors of psychological distress for communities affected directly and indirectly by violent conflict in Mollucas

Variables	Total sample (*N* = 510)		
	B	95% CI	*p*
Intercept	4.607	3.907-5.305	< 0.001
Displacement status (IDPs)	-.695	-1.060-(-0.331)	< 0.001
Gender (male)	-.167	-0.241-(-0.094)	< 0.001
Threat	.105	0.021-0.188	0.014
Assets (higher)	-.068	-0.111-0.025	0.002
SOC (higher)	-.024	-0.033-(-0.016)	< 0.001
Married	-.479	-0.768-(-0.189)	0.001
Assets * SOC	.001	< 0.001-0.001	0.021
Assets * Displacement status	.017	0.004-0.029	0.010
Marital status * Displacement status	.260	0.026-0.495	0.030

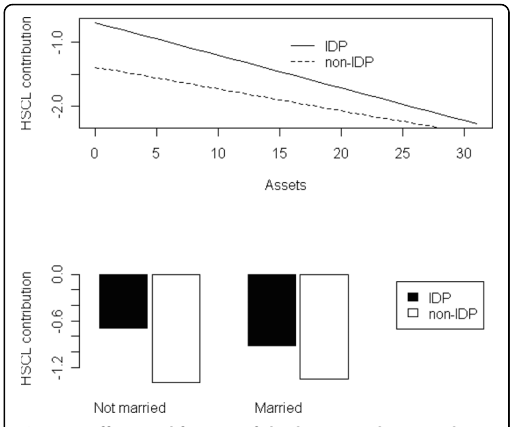

Figure 2 Effect modification of displacement-distress relation by assets (upper panel) and marital status (lower panel).

lost their assets, such as houses and land, during the forced migration that followed the conflict [16]. IDPs also experienced more disturbance of education than non-IDPs, which may lead to school dropouts and job loss. However, both population groups had similar levels of food and nonfood consumption. Most people in Mollucas are still fulfilling their daily consumption needs from their environment. Many people grow their own vegetables or catch fish for their own families [33,34]. Furthermore, it was equally difficult for IDPs and non-IDPs to obtain nonfood consumption objects such as clothes, health care and recreation equipment. The Mollucas are located far from the big cities, and goods transportation could be problematic during the conflict and post-conflict period due to the destruction of economic infrastructures [35].

The insignificant difference of distress level between IDPs and non-IDPs in 2006 was probably related to the improvement of the economic conditions in the IDPs areas (which were in the main island of Ambon) after the peace condition resumed in 2005. Being the location of the offices of the provincial government, Ambon island had received substantial economic stimulation activities which generated better income for most of its inhabitants. The security level had also improved as to attract national and foreign investors to the island. Numerous IDPs resettlement project have been conducted to speed up the recovery process. Those improved conditions might be associated with the significant reduction of the IDPs distress level from the previous year, and became more similar to those of the non-IDPs. On the other hand very little had changed in the two islands where the non-IDPs respondents lived after the conflict had ended. Progress in development

was very slow and people live the same kind of life that they have endured since previous year, possibly even years before.

Although there were significant differences between IDPs and non-IDPs proportions in religions and educational level, we found no associations between these variables and mental health in either community. Therefore those demographic characteristics are not likely to be associated with the psychological distress.

Risk factors for psychological distress

IDPs status appears to be an important risk factor for distress, both as a main effect and an interaction effect. This result indicated that there was a ripple effect from the disaster, where closer proximity to the violent conflict would predict higher distress. The main difference between IDPs and non-IDPs living conditions was the proximity to the violent conflict and their exposure to it. Previous studies demonstrated significant effects of proximity to the epicenter of disaster on morbidity rates and degree of psychological distress [1,36]. A study on nationwide psychological responses to the September 11 terrorist attack in New York indicated that people directly exposed to the event had significantly higher post-traumatic stress symptoms than those indirectly exposed [30]. As we found in our sample, those who are indirectly exposed can be expected to show a lower prevalence of psychiatric problems [37].

Being female was a risk factor for distress for the combined sample. Previous epidemiological studies in general populations have shown that women suffer more anxiety and depression than men [38]. In a post-conflict situation like Mollucas, women often experience more upsetting life events and are more vulnerable to abuse, which may be related to adverse life conditions, especially during the violence period [39-41]. Qualitative inquiries indicated that although women did not suffer of any gender based violence in the Mollucas conflict, many of them have been the victims of increased domestic violence since the conflict had started. In times of hardship, women often have more responsibilities and burdens in domestic areas, such as expanding their social role and entering the job market. The role-related overload of responsibilities that women have to endure might contribute to the elevated risk of common psychological distress [40,41].

Feeling that one's life was threatened was the traumatic event most commonly reported by IDPs and non-IDPs, and a risk factor for distress for both groups. Exposure to the disaster, regardless of the distance from it, awoke more intense fears of being the victim of violence and created distress among people [31,32]. We found that the prevalence of the fear of losing one's life was lower in the non-IDP than in the IDPs (41% and 77% respectively), but it was a risk factor for distress in the combined sample.

A lower score on asset ownership was a risk factor for distress. However, results from the analysis of interaction effects indicated that fewer assets among IDPs were associated with higher distress than among non-IDPs. Most of the IDPs had lost their assets during the violent conflict, and this made life more difficult. IDPs with the fewest assets lived in greater poverty than other IDPs. Fewer assets could mean that IDPs did not have a place to live or land to cultivate.

Another significant risk factor for distress was marital status. Those who were not married had higher distress levels than those who were married. From the interaction effect between marital status and IDPs status, we found that IDPs who were not married were at an even higher risk of distress than their married counterparts and non-IDPs. Previous studies have found that being single or having been formerly married were risk factors for depression and anxiety symptoms [42,43].

Sense of coherence appeared to be a protective factor from psychological distress for the combined sample of IDPs and non-IDPs, both as main effect and as an interaction effect with increasing number of assets. One might expect a higher SOC in a more stabile population (non-IDPs), which we did not find. SOC is stabilized around the age of 30 and it is considered as a trait [23]. The mean ages were 39 and 43 years for IDPs and non-IDPs respectively, and therefore SOC is likely to be a stable trait for them. Although both communities felt threatened by the conflict, their SOC appears not to be affected by it. This finding complements previous studies that revealed a strong association between SOC and positive outcome of mental health [44]. People with a high SOC can cope with stressful situations better and stay healthier than those with a low SOC [44,45]. The interaction between asset ownership and SOC indicated that people with lower SOC and fewer assets had the highest distress in our sample.

Limitations

We obtained information about traumatic events at different times for the two sample groups. The first time we collected data from the IDPs was in 2005, one year after the last major violent incidents took place in Ambon. We collected data from non-IDPs in 2006, when we conducted the second data collection from the IDPs. The time interval between the last violent conflict and data collection may have caused some memory distortion regarding the questions of traumatic experiences among non-IDPs. The distortion might have caused underreporting of traumatic events, and may make comparison with IDPs more difficult. The difference in psychological distress we found might have been more

pronounced if we had obtained data from non-IDPs in 2005.

Another limitation is that we only collected data from two communities in the province of Mollucas. Therefore, we cannot analyze the ripple effect on people living further from Ambon, such as those who live in the more distant neighboring provinces.

Strengths

The main strength of this study is the uniqueness of the data. As far as we are aware, it is the only study of the ripple effect on mental health from a man-made disaster with a high degree of community destruction in a developing country, despite the suggestion that such disasters in low-income countries are associated with the worst outcomes of mental health [13].

The instruments used in this study to measure mental health and socioeconomic conditions had been culturally validated. The details of the development and validation of the instruments have been described in another paper [17]. Benefits resulting from this cultural validation were probably the low refusal rate (17% and 7% among IDPs and non-IDPs respectively) and positive feedback from respondents. The cultural validation is a key issue in enabling this study to obtain meaningful and high quality results.

The different response rates between the IDP and non-IDP samples (83% and 93% respectively) were due to conditions in the field. The IDPs sample list was based on the list from the previous year and therefore was not based on an updated list of the inhabitants in the study areas. The research team could not find 57 participants due to their movement to areas outside Mollucas or unknown address in Mollucas, and 4 participants had passed away during the time interval between 2005 and 2006. Only 11 participants refused to take part with various reasons (severe illness, very busy with their activities, could not find a convenient time to participate). On the other hand, we had an updated list of villagers for the non-IDPs sample comprised of the actual people lived in the village during the data collection. Therefore the return rate was much higher in the non-IDPs sample. However, there is no assumption of information bias since we did not find any significant difference of distress between the IDPs who participated in the second year study and those who were not.

Implications

This study has general implications for emerging theories of the impact of violence and disasters on communities. The impact of threat may be expanded to a wider range of communities in varying degrees of proximity from the places where the conflict originated. The individual level measurements used in this study were essential since the appraisal of the impact of a violent conflict depends on individual perception although the exposure was a collective and ecological one. Individual responses toward one exposure may vary depending on many factors such as previous life experiences, the meaning given to the exposure by the person, individual losses due to the exposure, etc. Our findings are in line with the systemic or ecological contextual approach that indicates that the impact of violence toward an individual or a community is transposed to the society at large (macro-level) [2]. The different levels of society are interwoven and linked to each other so that violence rarely occupies the directly affected area only [2]. When one approaches disaster areas, one may use the findings of our study to provide assistance to the different levels of society.

This study can serve as a basis for more research. Extension of the study, such as the expansion of the sampling areas to other parts of Indonesia, might improve the generalizability of the hypothesis of a ripple effect of a disaster on psychological distress.

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Authors' contributions

SST: Did data collection, data analysis and drafted the manuscript. OK: Involved in data analysis and in writing the manuscript. EH: Involved in data collection, data analysis and writing the manuscript. All authors read and approved the final version of the manuscript.

Competing interests

The authors declare that they have no competing interests.

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References

1. Cao H, McFarlane A, Klimidis S: **Prevalence of psychiatric disorder following the 1988 Yun Nan (China) earthquake. The first 5-month period.** *Soc Psychiatry Psychiatr Epidemiol* 2003, **38**:204-212.
2. de Mel S, McKenzie D, Woodruff C: **Mental health recovery after the tsunami: High-frequency longitudinal evidence from Sri Lankan small bussiness owners.** *Soc Science Medicine* 2008, **66**:582-595.
3. Frankenberg E, Friedman J, Gilespie T, Ingwersen N, Pynoos R, Rifai LU, *et al*: **Mental health in Sumatra after the tsunami.** *American J Public Health* 2008, **98**:1671-1677.
4. Galea S, Ahern J, Resnick H, *et al*: **Psychological sequelae of the September 11 terorist attacks in New York City.** *New England Journal of Medicine* 2002, **346**:982-987.
5. Galea S, Vlahov D, Resnick H, *et al*: **Trends of probable post-traumatic stress disorder in New York City after the September 11 terorist attacks.** *American Journal of Epidemiology* 2003, **158**:514-524.
6. Ursano RJ, Fullerton CS, Weisaeth L, Raphael B: *Textbook of disaster psychiatry* Cambridge University Press UK 2007.
7. Weisaæth L: *Stress reactions to an industrial disaster. An investigation of disaster behaviour and acute post-traumatic stress reactions, and a prospective, controlled, clinical and interventive study of sub-acute and long-term post-traumatic stress reactions* Oslo: University of Oslo 1984.

8. Abdo T, al-Dorzi H, Itani AR, Jabr F, Zaghloul N: **Earthquakes: health outcomes and implications in Lebanon.** *The Labanese Med Journal* 1997, **45**:197-200.
9. Baum A, Fleming R, Davidson LM: **Natural disaster and technological catastrophe.** *Environment and Behavior* 1983, **15**:333-354.
10. North CS, Nixon SJ, Shariat S, *et al*: **Psychiatric disdorders among survivors of the Oklahoma City bombing.** *JAMA* 1999, **282**:755-762.
11. Shore JH, Vollmer WM, Tatum EL: **Community patterns of posttraumatic stress disorders.** *Journal of Nervous and Mental Disease* 1989, **177**:681-685.
12. Norris FH, Friedman MJ, Watson PJ: **60,000 disaster victims speak: Part II. Summary and Implications of the disaster mental health research.** *Psychiatry* 2002, **65**:240-260.
13. Davidson JRT, McFarlane AC: **The extent and impact of mental health problems after disaster.** *J Clin Psychiatry* 2006, **67**:9-14.
14. Porter M, Haslam N: **Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons: a meta-analysis.** *JAMA* 2005, **294**:602-612.
15. Alexander D: **The health effect of earthquakes in the mid-1990s.** *Disasters* 1996, **20**:231-47.
16. **Kompas Cyber Media National Indonesia newspaper published articles on Ambon conflicts and wars in the period of 1999-2005.** [http://www.kompas.com/].
17. Turnip SS, Hauff E: **Household roles, poverty and psychological distress in internally displaced persons affected by violent conflicts in Indonesia.** *Soc Psychiatry Psychiatr Epidemiol* 2007, **42**:997-1004.
18. Lipman RS, Covi L, Shapiro AK: **The Hopkins Symptom Checklist (HSCL)-factors derived from the HSCL-90.** *J Affect Disord* 1979, **1**:9-24.
19. Hollifield M, Warner TD, Lian N, Krakow B, Jenkins JH, Kesler J, Stevenson J, Westermeyer J: **Measuring trauma and health status in refugees: a critical review.** *JAMA* 2002, **288**:611-621.
20. Derogatis LR, Lipman RS, Covi L: **SCL-90: an outpatient psychiatric rating scale - preliminary report.** *Psychopharmacology Bull* 1973, **9**:13-27.
21. Derogatis LR, Lipman RS, Rickels K, *et al*: **The Hopkins Symptom Check List. A self report symptom inventory.** *Behavioral Science* 1974, **19**:1-15.
22. Winokur A, Winokur DF, Rickels K, Cox DS: **Symptoms of emotional stress in family planning service: stability over a four week period.** *Br J Psychiatry* 1984, **144**:395-399.
23. Antonovsky A: *Unraveling the mystery of health: how people manage stress and stay well* San Francisco: Jossey-Bass 1987.
24. Antonovsky A: **The structure and properties of the sense of coherence scale.** *Soc science & medicine* 1993, **36**:725-733.
25. Ghazinour M: **Quality of life among Iranian refugees resettled in Sweden.** *Journal of Immigrant Health* 2004, **6**:71-81.
26. Van Ommeren M, Thapa S, Makaju R, Prasain D, Bhattarai R, de Jong JT: **Preparing instruments for transcultural research: use of the translation monitoring form with Nepali speaking Bhutanese refugees.** *Transcult Psychiatry* 1999, **36**:285-301.
27. Latuconsina AG: *Menggagas Masa Depan Maluku* Yogyakarta: Intan Cendekia 2007.
28. **Survei sosial ekonomi nasional.** *Indonesia's national socio-economic survey* National Statistical Body, Jakarta 2003.
29. SPSS Inc: Statistical package for the social sciences 2005.
30. Silver RC, Holman EA, McIntosh DN, *et al*: **Nationwide longitudinal study of psychological responses to September 11.** *JAMA* 2002, **288**:1235-1244.
31. Dixon P, Rehling G, Shiwach R: **Peripheral victims of the Herald of Free Enterprise disaster.** *Br J Med Psychol* 1993, **66**:193-202.
32. Pfefferbaum B, Gurwitch RH, McDonald NB, *et al*: **Posttraumatic stress among young children after the death of a friend or acquaintance in a terrorist bombing.** *Psychiatr Serv* 2000, **51**:386-8.
33. Andaya LY: *The world of Maluku: Eastern Indonesia in the early modern period* Honolulu: University of Hawaii press 1993.
34. Koning J, Nolten , Rodenburg , Saptari : *Women and households in Indonesia* Richmond: Curzon press 2000.
35. **Ambon Statistical Body.** *Kota Ambon dalam angka 2004* Percetakan Vensy Karya Ambon, Ambon 2005.
36. Carr VJ, Lewin TJ, Webster RA, Hazell PL, Kenardy JA, Carter GL: **Psychosocial sequelae of the 1989 Newcastle earthquake: I. Community disaster experiences and psychological morbidity 6 months post disaster.** *Psychol Med* 1995, **25**:539-555.
37. Breslau N, Davis GC: **Posttraumatic stress disorder in an urban population of young adults: risk factors for chronicity.** *Am J of Psychiatry* 1992, **149**:671-675.
38. Sandanger I, Nygard JF, Sorensen T, Moum T: **Is women's mental health more susceptible than men's to the influence of surrounding stress?** *Soc Psychiatry Psychiatr Epidemiol* 2004, **39**:177-184.
39. Nazroo JY, Eswards AC, Brown GW: **Gender differences in the onset of depression following a shared life event: a study of couples.** *Psychol Med* 1997, **27**:9-19.
40. Patel V, Kirkwood BR, Pednekar S, Weiss H, Mabey D: **Risk factors for common mental disorders in women. Population-based longitudinal study.** *Br J Psychiatry* 2006, **189**:547-555.
41. Piccinelli M, Wilkinson G: **Gender differences in depression. Critical review.** *Br J Psychiatry* 2000, **177**:486-492.
42. Şalcioğlu E, Başoğlu M, Livanou M: **Long-term psychological outcome for non-treatment-seeking earthquake survivors in Turkey.** *The Journal of Nervous and Mental Disease* 2003, **191**:154-160.
43. Guarnaccia P, Canino G, Rubio-Stipec M, Bravo M: **The prevalence of ataques de nervios in Puerta Rico disaster study. The role of culture in psychiatric epidemiology.** *The Journal of Nervous and Mental Disease* 1993, **181**:157-165.
44. Eriksson M, Lindström B: **Antonovsky's sense of coherence scale and the relation with health: a systematic review.** *J Epidemiol Community Health* 2006, **60**:376-381.
45. Cederblad M, Pruksachatkunakorn P, Boripunkul T, Intraprasert S, Hook B: **Sense of coherence in a Thai sample.** *Transcultural Psychiatry* 2003, **40**:585-600.

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