

The Role of Mapalus Culture by Minahasa Ethnic in North Sulawesi to the Coronary Heart Disease Incidents

Jeini Ester Nelwan^{1,4}, Edi Widjajanto^{1,2}, Sri Andarini^{1,2}, Sasmito Djati^{1,3}, Oksfriani Jufri Sumampouw⁴

¹Doctoral Program on Environmental Studies, University of Brawijaya Malang, Malang, Indonesia

²Medical Faculty, University of Brawijaya Malang, Malang, Indonesia

³Faculty of Mathematics and Science, University of Brawijaya Malang, Malang, Indonesia

⁴Faculty of Public Health, University of Sam Ratulangi Manado, Indonesia

DOI: 10.29322/IJSRP.8.3.2018.p7508

<http://dx.doi.org/10.29322/IJSRP.8.3.2018.p7508>

Abstract- Mapalus is a form of traditional mutual assistance inherited within ancestors in the land of Minahasa. Mapalus has become such a coding for Minahasa ethnic. The implementation of Mapalus has taken place in various aspects ranging from agriculture, social, community, politics, security and health. In the field of health, there has never been a study of the effect of the implementation of Mapalus tradition on the incidence of a disease, especially coronary heart disease (CHD). This study was conducted through qualitative approach. The results obtained that the implementation of Mapalus values is still done by the ethnic communities of Minahasa, and these values affect the incidence of CHD in Minahasa.

Index Terms- Mapalus, Minahasa Ethnic, Coronary Heart Disease

I. INTRODUCTION

Heart and blood vessels disease has been declared since 1995 as the main cause of death in Indonesia, and these are now beginning to threaten the younger generation. Coronary heart disease (CHD) was initially only found in people aged 45 years and older. Based on the recent data in some hospitals, however, the cases of CHD have been found in younger people aged between 27-32 years. This is due to the increased risk factors of lifestyle changes over time and the civilization [1].

In particular, coronary heart disease also becomes a crucial health issue in North Sulawesi. The results of basic health research (Risesdas) by Ministry of Health of Indonesia in 2013 show CHD prevalence was 0.7%; this figure is above the national prevalence of 0.5%, and in addition, this prevalence is the second highest in Indonesia. This trend occurs because risk factors for CHD such as obesity, smoking, diabetes mellitus and hypertension which have a fairly high prevalence [2].

Mapalus itself is one of socio-cultural values in Minahasa society in North Sulawesi, Indonesia. Other social cultural values in this community are such as *Si Tou Timou Tumou Tou* and brotherhood for all. Mapalus is the philosophy of *Si Tou Timou Tumou Tou*. Mapalus has several important principles, namely the principles of religiosity, kinship, consensus and consensus, common working and unity [3]. Mapalus in the field of health, however, is still not much concerned. Several studies have shown that Mapalus culture plays contributive role in improving the performance of human resources in the field of health and quality

of hospital services. In addition, Mapalus also plays a role in the achievement of Millenium Development Goals (MDGs) particularly goals 4 and 5 concerning with reducing infant and child mortality and improving maternal health [4,5]. These studies indicate that Mapalus as one of the local wisdoms of Minahasa community may still be explored more deeply about its role in various fields, including in the field of health, especially in the effort of controlling the spread of disease based on the local wisdom of the community. The purpose of this study is to explore the implementation of cultural values of Mapalus in Minahasa community that may affect the public health, especially the incidence of coronary heart disease (CHD).

II. MATERIAL AND METHODS

2.1. Methods

This research was a qualitative research with the rationale to identify the role of Mapalus culture in relation with health issues, in particular, factors related to the incidence of coronary heart disease (CHD). Data obtained from the qualitative identification became the indicators used in the question items in the questionnaire related to Mapalus.

Non-probability sampling technique was employed in determining the data sources in this study, meaning that through this technique, each member of population did not have equal opportunities to be selected as the research sample. The purposive sampling technique was used in determining the research sample. This technique provided an extent to the researchers to determine the samples based on the researchers' own considerations of the character of the data sources. Cultural observers and researchers and academicians were the respondents involved in this study. Sampling on the data source was snowball technique that the number was growing until the complete answer was found.

Based on the objectives of the data obtained in the qualitative approach, the first selected informant was the cultural researcher from the Cultural Conservation Center of North Sulawesi (informant 1). Result of interview with informant 1 provided some inquiries hence the researchers were suggested contact academics (informant 2) and cultural observers (informant 3). Results of interviews with informants 2, the researchers were advised to conduct in-depth interviews to a cultural observer (informant 3). This informant is the key

informant (keyperson). Informant 3, is a former academic in the field of culture who has done several studies on Minahasa culture especially *Mapalus*. To date, informant 3 is the only person who has the most valid information about *Mapalus* in the area of North Sulawesi. Data analysis was conducted through content analysis model according to Miles and Hubberman. The data obtained were then presented in the form of narration.

III. DISCUSSION

The Minahasa community recognizes a form of cooperation which is commonly called as *Mapalus*. *Mapalus* is a form of traditional mutual assistance to help each other and it has been inherited within ancestors in the land of Minahasa to this date; *Mapalus* is something intended for mutual benefit by and for each member. *Mapalus* is part of *gotong royong* culture, which is common in Indonesian context, meaning selfless cooperation and mutual assistance (unlike helping each other where there are rights and obligations). *Mapalus* commonly is implemented in the area of agriculture, and it was in 1960 became the turning point for *Mapalus* development.

Mapalus was originally started in the area of agriculture. In this case *Mapalus* is done to open and work for the farmland. For this, the activities began with the formation of *Mapalus* group consisting of 10 people, of group members are usually based on kinship and relatives. Furthermore, this group will elect the group leader. The leadership of this group covers the responsibility of organizing *Mapalus* group even in giving advice to punishment such as lashes. The person who became the leader of the *Mapalus* group must first be given a lash by a member of the *Mapalus* group, so that no member *Mapalus* makes any objections in case being punished by the leader later.

Some habits of *Mapalus* activities are waking up very early in the morning around 4 a.m., and it is usually arranged by the group leader. The wake-up arrangements are made using signals such as drums and other instruments. Food and lunch have been prepared by the group at the night before. The trip to the farmland usually takes 1-2 hours (depending on the location of the farmland). Due to the cold weather in the early morning, every member of *Mapalus* will be given a shot of *captikus*, traditional distilled beverage from the enau tree (*Arenga pennata*) containing high alcohol. As the lunch time, the logistics for lunch is firstly arranged by the group leader, and the members eat together by using banana leaves. The common food menu for the lunch is cassava, banana, vegetable and chili sauces.

Philosophically *Mapalus* is local spirit and local wisdom of Minahasan society that has already existed and instilled in the heart of the society. *Mapalus* has three basic types of human personality in its group: 1) **Touching Hearts** (a self-call with sincerity of fundamental and deep conscience), 2) **Teaching Mind** (full of awareness and responsibility to empower the people and groups), and 3) **Transforming Life** (mutual living and welfare of every person and group in the community). In the book *The Mapalus Way*, *Mapalus* is described as a work system that has ethical values such as reciprocal, participatory, solidarity, responsibility, mutual cooperation, good leadership, discipline, transparency, equality, and trust.

Mapalus is a social system that fits well with the various activities namely, economic, social, and even nation-building

activities; as referring the *Mapalus* as the spirit and the foundation of activities, it always succeeds. Like a body, *Mapalus* is the working system of harmonious biological functions among organs of the body from the brain, eyes, mouth, hands, feet, and others. It seems that the human body that seeks to create order and control in matters relating to its own body, as well as *Mapalus*, it strives for stability for social life. *Mapalus* cannot grow to maximum level if it is not in a coherent symbolic system (interconnected). *Mapalus* with its values has become a symbol system that closely adheres to Minahasan people which further becomes the coding of a Minahasa cultural identity.

In other words, *Mapalus* is a symbol of the presence of the Minahasa community which in its social implementation pervades the fields as a work relation, both in the economic, social and religious aspects. Indeed *tau* (people) of Minahasa should be first familiar with the working system in the field of agriculture. *Mapalus* has an active function to collect and involve the role of the community to help each other actively in agriculture such as cultivating and planting, caring, harvesting and even marketing the agricultural products.

As the migration trend of this society, *Mapalus* has begun to shift as well. As it was initially part of the agricultural sector, and then it shifts into the housing sector (building a house together), entering the church, office, community through gathering or mourning. For example regular gathering of *tuama waya* (for male members) and *wewene waya* (for female members), the social gatherings are namely utilizing food and money.

Currently *Mapalus* has experienced a so-called cultural change means that *Mapalus* has been applied to various fields but still with the same spirit and philosophy, such as *Mapalus* of grief, happiness, and mourning. The location where the *Mapalus* is still commonly visible is in the area of Minahasa, while other area that has experienced the cultural changes is in the city of Manado.

3.1 The Development of *Mapalus*

Mapalus has developed in agricultural sector, and it was in 1960 became the turning point for the development of *Mapalus*. This occurred because the migration started from the rural community to urban area such as City of Manado due to job offer in the city area. This made *Mapalus* starts shifting from *mainscaaff* to *schelscaaff* (from village community to urban community).

Due to these changes, the nature of *Mapalus* begins to shift as well. Initially it was part of the agricultural sector shifts into the other sectors namely housing (building a house together), entering the church, office, the role of community through gathering of happiness and mourning, for example regular gathering of *tuama waya* (for male members) and *wewene waya* (for female members); this type of social gathering is like collecting food and money for the community members. The *Mapalus* gathering has shifted into a social pillar with the obligation for the community members to bring food in 2 forms of the events that are *kumawus* and *meekan*.

The development of *Mapalus* began to occur when the migration of the community people to City of Manado, and they are still bringing the local culture from their village; one of the local culture from the village is *Mapalus*. The rationale of

bringing the *Mapalus* culture and it exists is because the situation in the city is hard for the people, so that the attitude of solidarity among the community is needed. It is this solidarity attitude that *forces* the society to establish the pillars of *Mapalus* in the city. This is the beginning of the development of traditional *Mapalus* in a more modern context. Mutual assistance consists of 11 ethos like, reciprocal, participatory, solidarity, responsibility/responsibility, mutual cooperation, good leadership, discipline, transparency, equality and mutual trust, and 5 principles such as love, plurality, social justice, faith, and deliberation. In addition, *Mapalus* also evolves from agriculture to other areas such as social, economic, government, and health. The development of *Mapalus* according to Parengkuan [6] has been divided into several time periods, namely before 1680s, 1680-1860, 1860-1950, 1950-1970 and after 1970. *Mapalus* system in Minahasa before 1680s can be seen in Figure 1.

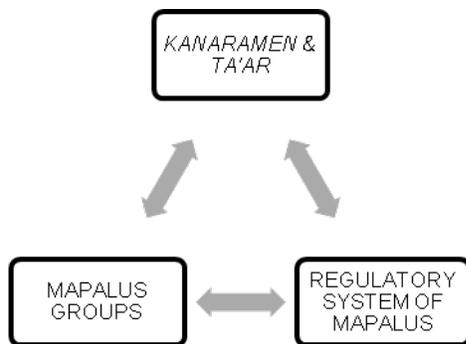


Figure 1. *Mapalus* System before 1680s [6]

Figure 1 describes that the *Mapalus* regulatory system is rooted in *kanaramen* and *ta'ar* that govern the social interaction and also the number of *Mapalus* groups, their leadership, and bound, working conditions, sanctions, and so forth. The system also provides guarantees to *Mapalus* members regarding their consumption rights before, during and after work. This is done in relation to their rights to receive assistance in accordance with the fixed list of names and on the privileges of other members. *Mapalus* groups use a specific regulatory system, constantly directed by *kanaramen* and *ta'ar*, so there are always new regulatory restrictions to improve the system or adapt it to changes [6]. The following Figure describes the *Mapalus* system in the period of 1680-1860.

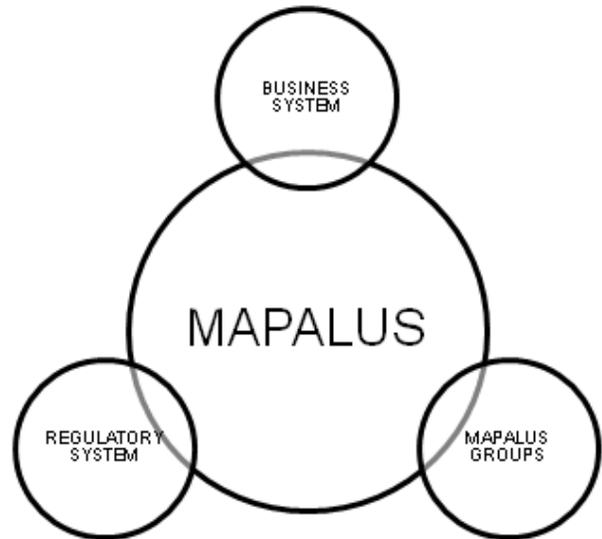


Figure 2. Four elements of *Mapalus* in the period of 1680-1860

In the period 1680-1860, in this *Mapalus* system, the time interval is also needed to ascertain whether *kanaramen* and *ta'ar* will sanction the *Mapalus* regulatory system tailored to the fulfillment of the terms of the agreement. The *kawanua*, especially the *Mapalus* groups, did not encounter any problems due to the flexibility and simplicity of existing norms. The first network was built in the period of 1853-1859. The use of carts, the construction of road networks and market development, together with the use of horses, stimulated cash economic system based on money in Minahasa. The liveliness of the cash economic system in this period greatly affected the system of *Mapalus* after that.

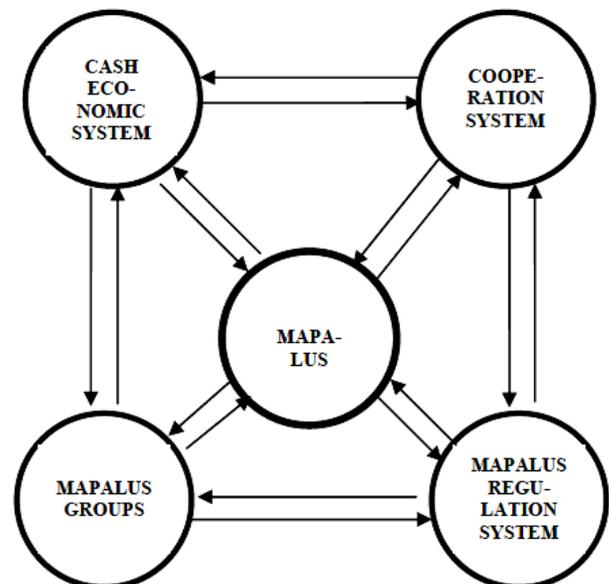


Figure 3. The development of *Mapalus* after 1860s

The figure above shows the development of *Mapalus* after 1860s. In this period, the *Mapalus* system has been developed on

the effects of the economic field, especially on the use of cash economic system. This is done in the payment of community work and services. Minahasan farmers with trade involvement are not the first time to utilize the instrumental *Mapalus*. The colonial government certainly needed a lot of manpower to expand the road network throughout the Minahasa region and connect it with Manado. No tractor or bulldozer reached the hills and filled the valley to get to this network. Through *Basar* Law and *Kadua* Law, the colonial government requested the assistance of the *Tua* Law in mobilizing the community [6]. The easiest way for the *Tua* Law to accommodate this was by utilizing *Mapalus* groups that are always available for work, especially when they were not busy on the plantation. One example of large-scale *Mapalus* mobilization for road construction was in the 19th Century which occurred during the construction of a road connecting Tondano with Airmadidi. Such *Mapalus* labor was part of a government-operated corvee system (*heerendienst*) [6].

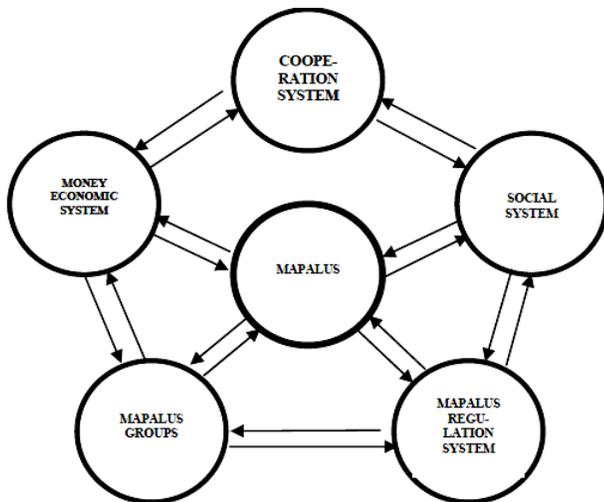


Figure 4. *Mapalus* system after 1950

Mapalus which was originally comprised of only three elements has now multiplied in complexity with the addition of cash economy, cooperation system, and social system. The variations and diversification in the concept and organization of *Mapalus* seem to be linked to increased cash economy and two other non-original elements. The increased availability of employment opportunities for rural-urban migrants has led to fewer workers in the agricultural sector particularly in villages in the area of Minahasa [6].

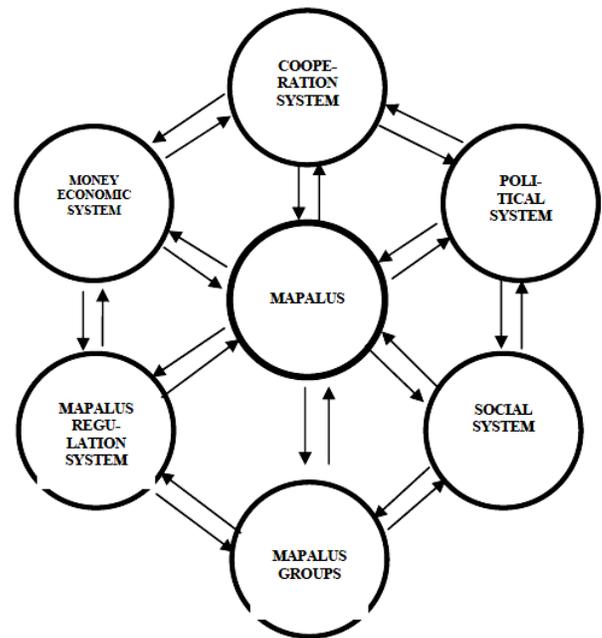


Figure 5. The development of *Mapalus* after 1970

The figure above shows the role of the political system at both national and local levels in exploiting *Mapalus* for national and regional development purposes. The political system was able to effortlessly utilize the *Mapalus* characteristics, and indeed these efforts were warmly welcomed by *Mapalus* groups themselves. This is possible with regard to the concept of *Mapalus* itself as well as the desire of the village community to build a better future for them. When government leaders campaign the slogans “*Mapalus* spirit”, Minahasan society will soon understand and absorb the meaning. The concept of *Mapalus* is always open to innovation, and if channeled effectively, it is capable of mobilizing and directing people to support government programs or be useful for the villagers [6].

3.2 *Mapalus* and Health

The scope of *Mapalus* in particular related to the health sector, it particularly influences the incidence of CHD based on ethos and the principles of *Mapalus*. The results of this interview were then incorporated into question items in the questionnaire for the *Mapalus* variable. *Mapalus* with the mutual aid and cooperation is specified into 11 ethoses like, reciprocal, participatory, solidarity, responsibility, mutual cooperation, good leadership, discipline, transparency, equality and additional 5 principles such as love, plurality, social justice, faith, and deliberation. In addition, *Mapalus* also evolves from agriculture to other aspects such as social, economic, government, and health.

There are some questions stated in the questionnaire in relation with values upon the implementation of *Mapalus* in the daily life of Minahasan ethnic, especially those related to the incidence of CHD based on the ethos and principles of *Mapalus*. The questions are outlined as follows:

1. Do you participate in activities in a community that is a healthy lifestyle such as healthy walking and jogging, community services, public sport activities e.g. gymnastics, and others?

2. Do you participate in community units in the community, for example bringing food in “*Mapalus* food” and other occasion?
3. Are you on time for a medical checkup and taking any medications recommended by the doctor?
4. Do you have enough courage to refuse any invitation from someone who may lead you to unhealthy lifestyle such as smoking, drinking, consuming prohibited foods, and so on?
5. Do you seek to build tolerance between family and neighbors in order to avoid conflict and stress?
6. Do you perform your duties and responsibilities as the member of a community through participating in health promotion efforts such as health counseling conducted by the health service center in the village or community?
7. Do you do any advice given by doctor/nurse because you trust them?
8. Do you strive or work hard in doing medical treatment or prevention of certain disease as suggested by the doctor?
9. Do you work together with a doctor, nurse, or medical staffs in order to control the spread of particular disease during the campaign in a community?
10. Do you tell your actual medical condition honestly to the doctor, nurse, medical staffs, and family members?
11. Do you assume that everyone has the same right to health action and services?
12. Do you help others (due to illness or disaster) with sincerity without asking for replies?
13. Do you assume that diversity is a social capital to be respected?
14. Do you act fairly to everyone?
15. Do you believe that human beings can try to be healthy, but God determines them all at last?
16. Do you consult or take action through consensus in family, community and other context?

According to Umbas [7], *Mapalus* is divided into 11 ethos and 5 principles. Detail elaboration of the ethos and principles is presented in the following Table 1.

Table 1. Ethos and Principles of *Mapalus*

No	Ethos / Principles	Elaboration
1	Participative	The participative ethos or value is manifested by the community in its voluntary initiative to give contribution (actively involved in activities) without any coercion or burden. This is a true call to every citizen because such involvement shows the existence of individual as a community member. In its development, participative ethos has a distinguishable typologies or characters namely passive, informative, incentive, functional,

		interactive, and independent participations.
2	Reciprocal	The reciprocal ethos is also called reciprocity. This is mutual consensus accepted in an unwritten law. The implementation is by the relationship between two cooperating behaviors that are treated and who treat the action work through <i>Mapalus</i> .
3	Discipline	The discipline ethos is another law enforcement section in the organization of <i>Mapalus</i> . Discipline is a process that creates a character that emphasizes learning, education, and appreciation of any commitments that have been agreed upon and have a common goal, not only related to punishment or offense. Discipline in <i>Mapalus</i> is defined as any attitudes through work values that leaders have positive and meticulous behavior, discretion, protect secrecy, focus on problems, consistency, flexibility, educate and advise, constructive and monitoring and evaluation.
4	Leadership	Leadership is part of some elements of <i>Mapalus</i> that become the artistic side in leading the organization. This means it is the leadership that makes a <i>Mapalus</i> system either moves well or not. If it is weak then automatically the entire organ from <i>Mapalus</i> becomes weak. Thus, leadership becomes the reinforcing element of a <i>Mapalus</i> system
5	Solidarity	<i>Mapalus</i> may occur in sudden circumstances, in case when there is a family member dies. For this, a <i>Mapalus</i> system is formed by itself. This can happen because of the high solidarity among members of <i>Mapalus</i> . Spontaneously the grieving family will record and remember the kindness of those who have helped that, at some time later when grief afflicts their families the assisted families will repay what they have got. Thus <i>Mapalus</i> will establish well if the solidarity exists among the community members. Solidarity among fellow members and even fellow human beings in the Minahasan cultural community is quite high. It always appears in the show of joy and sorrow, all the people in droves come to help.
6	Responsibility	The responsibility ethos is closely related to the cooperation agreement

		of <i>Mapalus</i> which binds every individual to be more proactive, not just answering but can also be encouraged and demanded in a moral sense. The accountability of every member of <i>Mapalus</i> relates to unwritten law of <i>Mapalus</i> —but it has strict and executable consequences with customary law such as being ostracized, can no longer be trusted for life, and even the individual may become a stranger and alienated within the community as he or she cannot be trusted anymore.
7	Standard mutual trust	The mutual trust ethos is somewhat difficult to understand by some people because of the bad experience that may have occurred in the work system that enforces the standard (mutual) trust ethos like this. This is related to the decline in the value of trust among the people. Society is more selective in giving trust to others because of previous (bad) experiences that have abused the trust given.
8	Hard work	The hard work ethos is the key idea of <i>Mapalus</i> . Everyone involved must absolutely work hard as individuals as well as in a group of <i>Mapalus</i> . The nature of this hard work has been characterized by Minahasan people for long time. There is no place for the slackers in the <i>Mapalus</i> system
9	Mutual assistance (<i>Gotong royong</i>)	The mutual assistance (<i>gotong royong</i>) ethos is often misunderstood as if <i>Mapalus</i> was just a matter of <i>gotong royong</i> . Indeed it is a thing that became one of the characteristics of <i>Mapalus</i> . It can also be understood as equality among members. This is more pronounced during mass work or community services, where every community member is actively involved and helps each other.
10	Transparency	The transparency ethos or openness is a developing ethos that evolves with the growing of communication and information technology. With the growing of the media in spreading both positive and negative news, the media sometimes exceeds the rules of journalism, causing this information demands for everything to be done openly or transparently. But in <i>Mapalus</i> , transparency is done so that accountability and control

		systems can be guaranteed.
11	Equality	The equality ethos shows that everyone has equal position in the customary and constitutional law of <i>Mapalus</i> . All should submit to any organization's general statute to anyone and any position out of the <i>Mapalus</i> institution they are currently attending. This ethos will establish justice, togetherness, and partnership, and they become united because of the guarantee of the same legal position.
12	Care	The caring principle is one of the principles of <i>Mapalus</i> to take care of others, maning the principle requires the members to help others sincerely (without any expectation in return).
13	Plurality	Pluralism principle is social capital and this is the thing that God has created for people to learn and to accept one another. This is one of the principles of <i>Mapalus</i> in upholding diversity and pluralism.
14	Social Justice	The values of Five Principles of Indonesia (<i>Pancasila</i>) are also integrated in the implementation of <i>Mapalus</i> culture. The principle of social justice in Pancasila is also in line with what found in in <i>Mapalus</i> . All Minahasan people are treated and treat everyone fairly regardless of their race, religion and ethnic.
15	Faith	The principle of faith is also found in <i>Mapalus</i> . This principle makes the Minahasan society believe in the bigger power that governs the life in this world that is God. Faith is private and individual business between man and God. For this, there should not be any mutual arrangement between the followers of the religions or between the same religion (different sects).
16	Consensus	The last principle is the way to make decision which should be discussed and consented within the members. The decision-making process within the family should be made as the result of discussion among family members, and so on. This principle is known as consensus or deliberation.

The scope of *Mapalus* in relation with the medical matter affects the incidence of CHD based on the 16 values absorbed from the ethos and principles of *Mapalus*. The values of *Mapalus* still exist and are inherent within the Minahasa community within generations. The values of *Mapalus* which was originated from the agricultural sector are currently being implemented by

the Minahasan community even though it has shifted along with the social changes of the people, from agriculture to politics, government, social, community, health and others. This shift began to occur when the migration of the people from village to city. The migration has caused the Minahasan people to start adapting to new life without losing the values of *Mapalus* which still remain inherently within the society.

Mapalus, which was originally from cooperation and helping each other to open farmland, from agricultural sector shifted into other sector such as cooperation, mutual assistance, helping in social life such as gathering and community unit, either in offices, religious organizations, social organizations and other society. It is implemented through likes, sickness and sorrow.

Minahasan community is a religious society. It has been proven through frequent thanksgiving ceremonies like birthday celebrations, weddings, new homes, new class, promotions, moving houses, graduating from kindergarten to college, recovering from illness, commemoration, the third night after death, one-week after the family died, 40 days of death, and others. It seems that almost every day in the Minahasa area is thanksgiving and worship day, while Saturday and Sunday are known as social work day (could be attending various thanksgiving events).

Minahasan community is a society with high solidarity. They are happy when their relatives and neighbors are happy, and vice versa. Thus, when there is a thanksgiving event, attending the event becomes a necessity even though attending 2-3 thanksgiving events in one day. Thanksgiving may start at lunchtime and end in the midnight. The activities are usually started with worship, big meals and eating together, singing together, dancing together, discussion, drinking together (mineral water, softdrink and local alcoholic beverage) and others. These are some examples of the implementation of *Mapalus* values in the life of the Minahasa community.

Several studies have shown that there has not been direct research analyzing the role of *Mapalus* for CHD control, but it is an indirect influence. Research that has been done to see the role of *Mapalus* in the socio-economic, behavior and health services can be seen in Table 2.

Table 2. Research on *Mapalus*

No.	Aspects	Results	Researchers
1	Community empowerment	The concept of neighborhood security is conducted through public	Kilis [8]
		The role of <i>Mapalus</i> to empower the community in City of Tomohon	Turang <i>et al</i> [9]
		Participation on the members in <i>Mapalus</i> farmers organization	Ngangi [10]
		The role of	Goni [11]

2	Culture, Language, and Education	<i>Mapalus</i> in improving farmers welfare	
		Community empowerment in <i>Mapalus</i> -based community development	Fensyana [12]
		The application of Emily Durkheim's theory on <i>Mapalus</i> culture in Minahasa	Mamentu [13]
3	Social and Politic	The values of <i>Mapalus</i> culture in the teaching of civic education to improve tolerance	Pangalila [14]
		The role of <i>Mapalus</i> to preserve national culture	Wawointana and Putra [14]
		Democracy in <i>Mapalus</i> organization system in Minahasa	Sendow dan Santoso [16]
4	Health	The implementation of <i>Mapalus</i> in community security	Tandaju [17]
		The influence of <i>Mapalus</i> in improving MDGs achievements through human resources	Ririmasse <i>et al</i> [5]
		The influence of <i>Mapalus</i> culture in human attitude and hospital management	Ririmasse <i>et al</i> [4]

IV. CONCLUSIONS

Mapalus is still implemented in the Minahasa ethnic communities. The implementation can be observed through the sixteen values formulated from the ethos and principles of *Mapalus*. The implementation of *Mapalus* has evolved from agriculture to social, political, economic, security and health aspects by still using the same *Mapalus* essence. The implementation of *Mapalus* that influences the incidence of CHD is likely related to behavioral risk factors such as consuming fatty foods and smoking in *Mapalus* activities such as gathering

REFERENCES

- [1] Nelwan, E. J., Widjajanto, E., Andarini, S., & Djati, M. S. (2017). Modified Risk Factors for Coronary Heart Disease (CHD) in Minahasa Ethnic Group From Manado City Indonesia. *The Journal of Experimental Life Science*, 6(2), 88-94.
- [2] Ministry of Health of Republic of Indonesia, *Riset Kesehatan Dasar (Riskesdas)*. Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia, Jakarta, Indonesia, 2013.
- [3] Turang, J. 1997. *Profil kebudayaan Minahasa*. Cultural Council of Minahasa. Tomohon.
- [4] Ririmasse, H., Widjajanto, E., and Roebijoso, J., 2013, Effects of *Mapalus* Value Culture on Human Resources Behavior and Performance of Hospital Management (General Center Hospital Kandou and General Hospital Bethesda Tomohon, Indonesia), *Research on Humanities and Social Sciences*, 3(14), 15-22.
- [5] Ririmasse, H., Widjajanto, E., & Jack Roebijoso, S. 2014. The Influence of *Mapalus* Culture via Hospital-based Human Resources Behavior on Maternal and Child Health toward Millenium Development Goals (Case Study of RSUP Kandou Manado).
- [6] Parengkuan, F.E.W., 2006, **A Contribution to the History of *Mapalus* in the Minahasa, North Sulawesi.**, *Jurnal Masyarakat dan Budaya*, 8(2), 1-18.
- [7] Umbas, V., 2011, *The Mapalus way*, Media Cahaya Siang. Manado.
- [8] Kilis, B. M., 2013, Pengaruh Perilaku terhadap Keterlibatan Masyarakat dalam Program *Mapalus* Kamtibmas di Kecamatan Tondano Selatan Kabupaten Minahasa., *Engineering and Education (E2J)*, 1(4): 240-249
- [9] Turang, T. I., Suman, A., Mandang, J., and Soemarno, S., 2013, Kajian Peran *Mapalus* Dalam Pemberdayaan Masyarakat Di Kota Tomohon. *WACANA, Jurnal Sosial dan Humaniora*, 15(4), 1-7.
- [10] Ngangi, C. R., "Faktor-Faktor Yang Mempengaruhi Partisipasi Anggota Terhadap Kegiatan Organisasi *Mapalus* Tani Di Kecamatan Tomohon Kabupaten Minahasa", Master Thesis, Padjajaran University, Bandung, Indonesia, 1988.
- [11] Goni, J, 2000. "The *Mapalus* contribution in increasing the small-scale farmers income in Minahasa, Sulawesi (Indonesia)", *Eugenia (Indonesia): Media Publikasi Ilmu Pertanian*, 1(1): 10-18
- [12] Fensyana, T. C., 2014, Pemberdayaan Masyarakat Dalam Pelaksanaan Pembangunan Berbasis Lingkungan-*Mapaluse* (PBL-*Mapaluse*) di Kelurahan Bahu (Studi di Kelurahan Bahu Kecamatan Malalayang)., *Jurnal Eksekutif*, 1(3): 1-7
- [13] Mamentu, A. C., 2013, Aplikasi Teori Emily Durkheim Terhadap Budaya "*Mapalus*" Di Minahasa Propinsi Sulawesi Utara., *Jurnal Fakultas Bahasa dan Seni-Kompetensi*, 1(2): 11-17
- [14] Pangalila, T., "Pengaruh Internalisasi Nilai Budaya Si Tou Timou Tumou Tou, *Mapalus* Dan Torang Samua Basudara Dalam Pembelajaran Pkn Terhadap Peningkatan Sikap Toleransi Siswa: Penelitian Survey Terhadap Siswa SMA di Kota Tomohon-Sulawesi Utara", Doctoral dissertation, Universitas Pendidikan Indonesia, Bandung, Indonesia, 2013.
- [15] Wawointana, T., dan Putra, M. A., "Pelestarian mapulus di Minahasa dalam rangka pengembangan kebudayaan nasional: Suatu tinjauan tentang sistem gotong royong, tolong menolong pada masyarakat di Kabupaten Minahasa., Doctoral Dissertation. Universitas Gadjah Mada, Yogyakarta, Indonesia, 2001.
- [16] Sendow, Y., dan Santoso, P., "Demokrasi dalam organisasi *Mapalus* di Minahasa: Studi kasus di desa Tumuluntung Kecamatan Tareran Kabupaten Minahasa Selatan", Doctoral dissertation. Universitas Gadjah Mada, Yogyakarta, Indonesia, 2005
- [17] Tandaju, V., 2014, Implementasi Program *Mapalus* Kamtibmas di Kecamatan Maesaan Kabupaten Minahasa Selatan., *Jurnal Eksekutif*, 1(3), 8-15

AUTHORS

First Author – Jeini Ester Nelwan, Doctoral Program on Environmental Studies, University of Brawijaya Malang, Malang, Indonesia

Second Author – Edi Widjajanto, Medical Faculty, University of Brawijaya Malang, Malang, Indonesia

Third Author – Sri Andarini, Medical Faculty, University of Brawijaya Malang, Malang, Indonesia

Fourth Author – Sasmito Djati, Faculty of Mathematics and Science, University of Brawijaya Malang, Malang, Indonesia

Fifth Author – Oksfrian Jufri Sumampouw, Faculty of Public Health, University of Sam Ratulangi Manado, Indonesia, Email add: oksfrian.sumampouw@unsrat.ac.id