Changes in socioeconomic status, community health and environmental conditions of fishermen by transmigration (*transmigrasi*) in Lampung Timur, Indonesia

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Abstract: Indonesia is characterized by an uneven population distribution, i.e., approximately 60 percent of the population is concentrated on Java Island (7 percent of Indonesia's land areas), and others live on the islands of Kalimantan, Sumatra, Sulawesi and Papua. In order to mitigate the overpopulation problem in Java, the Indonesian government created a transmigration program (transmigrasi) in the early 20th century to move people from densely populated areas (mainly Java) to more sparse areas. The Lampung Province in Sumatra has been one well-known destination of transmigration since the first migration in 1905. Focusing on the fishermen that migrated into the coastal area of Lampung Timur in the mid-1980s, this study aims described the transmigration-induced changes in their socioeconomic status (SES), community health, environmental conditions and quality of life. Focus group discussion with selected people and interviews with 179 heads of households (all are first generation) revealed that their SES and community health conditions generally improved after transmigration. However, certain kinds of environmental degradations happened after they settled in the area. In 1996 some people moved out to the elephant-conservation area to seek for more fish, but they were forced to come back to the transmigration area after having social conflicts with the government. The perception of community health and environmental conditions, and QOL score with social conflict experience was worse than without social conflict experience, and the desire for further migration was higher in the former.[Nugroho, AS., Fujimura, M., Inaoka, T. **Changes in socioeconomic status, community health and environmental conditions of fishermen by transmigration (*transmigrasi*) in Lampung Timur, Indonesia**. *Life Sci J* 2012;9(4):789-798] (ISSN:1097-8135). http://www.lifesciencesite.com. 124

Keywords: Transmigration; fishermen; socioeconomic status (SES); community health; environmental conditions

1. Introduction

Human migration is natural, and academic papers have proposed several theories and models. A recent Human Development Report [1] stressed improvement in the quality of life (QOL), such as occupation, education, civil and political rights, and security and health care, but it is also true that immigrants have caused significant conflict with the indigenous population. Indonesia has a long history of migration programs (called transmigrasi in Indonesia) in the country. These programs were started during Dutch colonial rule in 1905 [2-4] to solve the overpopulation problem on Java Island (Java and Madura share only 7 percent of Indonesia's land, but they are inhabited by approximately 60 percent of Indonesia's population) as well as to reduce poverty in the country and to develop food production outside Java [5,6].

After independence in 1945, the Indonesian government continued the transmigration program [7], with various types of implementation. The transmigration in period (1945-1967) was understood as the displacement of families from an inner island (Java Island) to an outer island (Sumatra, Kalimantan, Sulawesi, Maluku and Papua Islands). After 1968, the Indonesian economy gradually developed under the New Order period (1968–1999), and many people participated in the program to fulfill their dreams. The number of people participating in the transmigration program has decreased since 1999. In fact, the transmigration program stopped for a while in 2000. According to the 2010 census in Fig. 1, roughly 20 million people migrated from the inner islands to the outer islands [4,8,9], making Indonesia's transmigration program the largest voluntary land settlement scheme in the world [10].

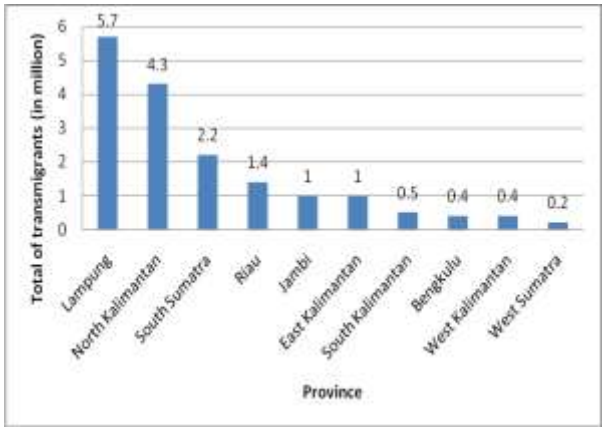

Fig. 1. Distribution of total migrants, families and descendants

In Sumatra, including Lampung, the transmigrants' manpower was used on various kinds of plantations, and the provinces of South Sumatra and Lampung developed as food-production areas and North Sumatra developed as a plantation area [4,11,12]. However, the transmigration program has created problems such as the accelerated deforestation of sensitive rainforests from the overuse of natural resources and the overgrazing of land [4]. For example, the transmigration area in Central Kalimantan showed that the peat land was unacceptable for rice cultivation, crops were destroyed by rodents, drainage and irrigation systems did not work properly; and the groundwater was highly acidic and inappropriate for drinking [7]. Some transmigration programs fail to improve the living standard of migrants and their quality of life, and instead create unsuitable farming systems, environmental degradation and cultural conflict [13].

The transmigration program was devoted to farmers and to fishermen to keep the border area and to reduce the density of fishermen on Java Island. In the 1908s, it became difficult for fishermen on Java Island to catch fish; their income decreased and they participated in the transmigration program to fish the outer islands. Fishermen migrants can cause problems for local fishermen in the way of unfair competition for the fishing catch and environmental damage [14]. Fishermen migrants will encourage significant environmental changes and they are more likely to be found in villages with lower environmental quality [14]. The lower environment quality will affect income levels, especially for the small fishermen who depend on the environment [15]. Decreasing the economic level will reduce their quality of life. Lampung Timur is an interesting research area that can describe this condition.

This study aims to describe the changes in socioeconomic status, community health and environmental condition among the people who migrated in Lampung Timur from Java and Sulawesi as fishermen in 1984. People were asked about those conditions before migration (at their original village), immediately following their migration, and at the time of study. Then their perception of community health and environmental quality was compared to theirs and others responses. This study also aims to describe their quality of life (QOL) in the present condition

2. Material and Methods

Indonesia's Lampung Province has long history of transmigration from the first migration in 1905, and this province has accepted the most Indonesian migrants [4]. Lampung Timur has been the destination of the transmigration program since the 1970s; therefore it can demonstrate changes in socioeconomic status (SES), community health, and environmental condition, and evaluate their quality of life (QOL). Research has been carried out in the transmigration area in Muara Mas Gading Village in the Lampung Timur district (Fig. 2). As many as 534 households (2,000 people) have migrated into this area from Java and Sulawesi since 1984. The most interesting thing is that the majority of migrants were fishermen.

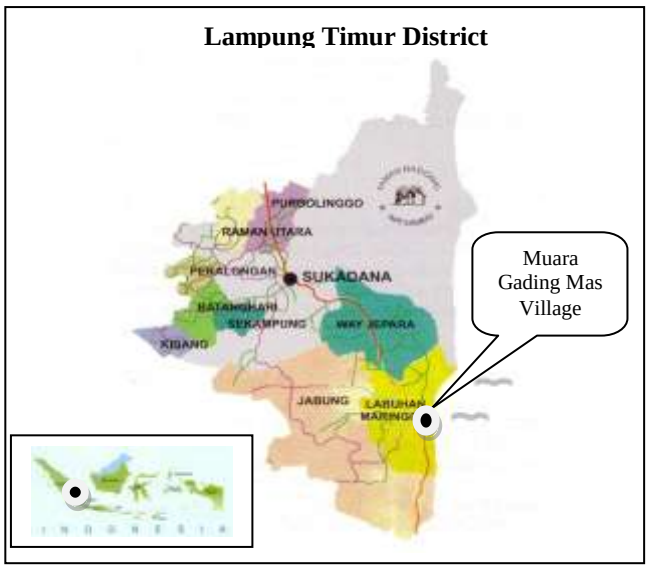

Fig. 2. Research area of Muara Gading Mas Village

The social conflicts that have happened since then are also interesting. The fundamental conflict happened because the fishermen could not earn enough income fishing. In 1996 it became difficult to get fish around the transmigration area, and some migrants (84 households) moved again to the border of the Lampung National Zoo's conservation area (+10 km from their area), even though settlement was restricted [16]. Migrants had to fight with the forest police—the processes of conflict resolution started in late 2008, and the forest police ordered migrants to leave by the end of January 2009. Nevertheless, they refused to move out. After the negotiations on November 6, 2009, migrants agreed to return to the transmigration areas by November 26, 2009. More than half of the migrants have followed the agreement, but 40 households remain in the Lampung National Zoo's conservation area. The forest police burned their houses on July 15, 2010, and most of them returned to the migration area. Our research was carried out just after they returned to the migration area.

The focus group discussion (FGD) included the head of the village, village secretary and staff, indigenous stakeholders, the head of fishermen's group, midwives, and school principals to share general information about the transmigration history, public health, sanitation and environmental conditions

before migration (at original village), just after migration (1984) and at the time of the study (2010). Participatory research discussion started with a substantial amount of time spent on creative ways to explore the participants' experiences or situations [17]. Pictures, maps and diagrams were used to recall old information [18].

Questionnaires for household respondents were composed of three major questions about socioeconomic status (SES), community health and environmental conditions. The SES included household income, ethnic groups, and experience with social conflict, education history and occupation. Household income is the sum of income from all sources received by all members of the household each month. Income refers to wages, salaries, profits, rents, and any earnings received. Income can also come as unemployment or workers compensation, social security, pensions, interests, government support, and family financial assistance [19]. Free and serial recall was used to collect information. Free recall helped participants remember information with the list data [20], while serial recall helps participants remember events chronologically [21]. Specifically, the questionnaire above directed respondents to recall information before migration (in their original village), just after migration (1984) and at the time of study (2010).

Perception questions differ from other types of survey questions that measure perception because they ask respondents to provide information on how they perceive matters such as their health status, environmental conditions and the effectiveness of programs. The questionnaires mentioned satisfaction level measures of how people evaluate their life as a whole rather than their current feelings. Participants responded using a 5 Likert scale with a given statement. For these questionnaires, respondents only expressed their perceptions before migration and at the time of study (2010).

To determine the level of quality of life between migrants who have experienced conflict and those who have not, we retrieved data on quality of life using the method of WHOQOL-BREF in Indonesian (*Bahasa*) version [22]. WHOQOL-BREF is a multi-dimensional, multi-lingual, generic profile that is standardized for sick and well populations in diverse cultures [23]. It demonstrates psychometric properties of internal consistency, reliability, content validity, and discriminant validity [24] and it is now the best instrument for cross-cultural use [25]. The WHOQOL-BREF sheet is also very efficient and effective, consists of 26 items that keep respondents engaged. In this study, the WHOQOL-BREF questionnaires were used for the respondents to describe their QOL in the second point of study (2012).

In total, 179 people (household heads or representatives, 165 males and 14 females aged 41-91 years) were interviewed August-September 2010. The research used purposive sampling for experience with social conflict (25 from 84 households) because they were living together, as refugees tend to do. Snowball sampling was used for groups without experience with social conflict (154 from 450 households). However, snowball sampling can be vulnerable to sampling error or biases because the randomness of the selection may result in a sample that does not reflect the makeup of the population [26]. Only 45 people out of 179 were interviewed in the second research period in January 2012 because of limited time. We should choose the same sample in the first research period. The low sample number can affect the reliability and validity in QOL level. All the data were analyzed with SPSS version 17 [27].

3. Results

3.1 Socioeconomic status of the migrants

As shown in Table 1, the migrants' average income (lowest column) before moving into Lampung was approximately 99,441 IDR/month, less than the minimum national standard at the time. Their income sharply increased after migration (259,776 IDR/month), since the government provided each migrant household a house (5 x 6 m^2), 800 m^2 of land, a fishpond, food for one and one-half years at the beginning of resettlement in 1984, and agricultural and fishing equipment to every 20 households. Twenty-five years later, their average income increased to 554,469 IDR/month. The migrants' monthly household income average in IDR increased from year to year, but when compared to the currency exchange rate in USD, their income was classified below the standard of the national average income (GNP) [28,29].

When average income was classified by education, it was unexpectedly high among those without education in all three periods. However, this was because the fishermen followed their father's job without going to school. Most of them migrated into the area as fishermen, but their jobs have changed over 25 years. Eleven people who changed from fishermen to small industry owners had a higher average income than fishermen, although those migrants who became fishing port workers or transport service workers had a lower income.

Ethnic group was expected to affect their income level because fishing gear differs (therefore the catch amount varies) by ethnic groups. However, the difference in average income by ethnic group was minor. The difference in average income for those who experienced conflict and those with no experience with social conflict were small before and after transmigration. At present, the average income of

the group with social conflict experience is smaller than the group without social conflict experience, probably because social conflict made their economic situation difficult after coming back to the transmigration area.

Table 1. Monthly average income by socioeconomic status (SES) in each period

	Average income per month		
	Before migration	1985	2010
Education			
Junior High School (2)	65,000 IDR	200,000 IDR	450,000 IDR
Primary School (62)	78,064 IDR	237,903 IDR	530,645 IDR
Illiterate (115)	111,565 IDR	270,260 IDR	569,130 IDR
Occupation			
-Jobless	25,102 IDR (42)	-	366,666 IDR (3)
-Fishing port worker	-	-	487,500 IDR (8)
-Small industry owners	-	200,000 IDR (1)	672,727 IDR (11)
- Farmer	133,333 IDR (6)	-	-
-Transport service worker	-	-	475,000 IDR (4)
-Fishermen	127,177 IDR (124)	258,595 IDR (178)	555,228 IDR (153)
Ethnic			
-Sundanese (56)	97,678 IDR	258,928 IDR	555,357 IDR
-Bugis (69)	102,898 IDR	263,768 IDR	578,985 IDR
-Javanese (54)	96,851 IDR	255,555 IDR	522,222 IDR
With or without conflict			
1. With conflict (25)	109,600 IDR	284,000 IDR	526,000 IDR
2. Without conflict (154)	97,792 IDR	255,844 IDR	559,090 IDR
Average income	99,441 IDR	259,776 IDR	554,469 IDR
International currency (average in year)[a]	1 USD = 1025 IDR	1 USD = 1110 IDR	1 USD = 8683 IDR
GNP per capita	540 USD	510 USD	2500 USD

Note: Figure in parenthesis indicates number of subjects in the category
[a]Sources: Bank Indonesia, 2012 and The World Bank, 2012

3.2 Community health

The community health of the migrants can be seen through disease events and health seeking behavior. Disease event data was captured by asking the respondents cross-check questions about the disease events in their household. Respondents were given a checklist of disease events that have happened in their life. The disease event list in the questionnaires used data from the sub-district hospital in the Labuhan Maringgai (Puskesmas) from 2007–2009. As shown in Table 2, the communal pattern of disease events is similar in the three periods (before migration, just after migration and the study period). The most common disease events for transmigrants in 2010 were viral or infection fever (32.4%), common cold or influenza (25.8%), and pertussis (allergy, common cough, dry cough) (25.8%). Other disease events included diarrhea, asthma, scabies, etc.

In this research, health seeking behavior is described as the process from the recognition of symptoms to the use of particular health facilities. This method attempts to identify a logical sequence of steps and looks at social and cultural factors that affect this sequence. This is primarily an anthropological approach, with qualitative methods of investigation [30]. Table 3 shows that there were no health centers or doctors (63.7 percent) before migration. Fishermen drunk traditional medicine or went to traditional birth attendants (TBA) when they had health problems. They preferred TBAs or traditional healers because they did not trust health centers (28.5 percent). They started going to health centers after migration (30.7 percent), when the government built new health centers in the transmigration area.

Table 2. Disease events (percent of the people per year) in each period

Disease events	Before migration	1985	2010
0. None	25.4%	14.6%	2.7%
1. Viral or infection fever	29.5%	30.0%	32.4%
2. Pertussis	16.0%	18.6%	25.8%
3. Common cold or influenza	16.0%	18.6%	25.8%
4. Diarrhea	3.7%	6.4%	4.5%
5. Scabies	3.7%	3.6%	3.0%
6. Asthma	2.0%	2.9%	2.7%
7. Gastritis	1.2%	2.1%	2.4%
8. Malaria	0.8%	-	0.3%
9. Pregnancy disease	0.8%	-	0.3%
10. Typhus	0.8%	0.7%	1.2%
11. Eye diseases	0.4%	1.4%	-
12. Kidney diseases	0.4%	0.4%	-
13. Dengue	0.4%	-	0.3%
14. Hepatitis	-	0.7%	-
15. Diabetes	-	2.1%	0.6%
16. Tubercolosis	-	-	0.9%

Note: Data calculation used multiple responses

In 1985, some people complained that they still found it difficult to go to health centers because they did not have enough money to pay for medical

treatment after migration (25.1 percent). Health insurance systems for the poor have been running since 2004, but they could not cover all medical expenses. The number of migrants who visited the health centers exceeded 58.7 percent, and the percentage that complained about the cost of medical treatment decreased in 2010.

Table 3. Health seeking behavior

Reason	Before migration	1985	2010
1. No health center available	63.7%	3.4%	-
2. Don't trust health center	28.5%	17.3%	0.6%
3. Use traditional medicine	4.5%	10.6%	8.9%
4. No have medical treatment fee for hospital	3.4%	25.1%	19.6%
5. Lazy to go to the hospital	-	5.6%	6.1%
6. Purchased medicine at local pharmacy	-	7.3%	6.1%
7. Visited a health center	-	30.7%	58.7%

Note: Data calculation used multiple responses

3.3 Perception of community health

The perceptions of community health in the questionnaire were concerned with the level of access to health facilities and public health services before migration and at present. The data analyses were separated into groups of migrants with and without social conflict experience. The results of the t-test show that the variance and means of community health perception were significantly different in transmigrants (both groups) before and after migration ($p< 0.05$, Table 4).

Table 4. Mean differences of community health perception of transmigrants (both groups with and without conflict experience) in before migration and present time (2010)

Community health perception of transmigrants (both groups)	Paired Differences					
	Mean (Before migration)	Mean (After migration)	SD	P	95% CI	
					Lower	Upper
Time of before present study period	-.68	-.08	1.07	.00*	-.75	-.43

*Significant different if $p < 0.05$

Note: Data calculation uses t-Test and N is 179. Likert scale: (-2) Very uncomfortable, (-1) uncomfortable, (0) not different, (1) comfortable, (2) very comfortable

The McNemar test of marginal homogenity in Table 5 was carried out to examine the difference between the perceptions of the groups before and after migration. The left side of the table shows there was no difference proportion in the perception of community health in the group with social conflict experience before and after migration ($p >0.05$). The perception of community health in this group was better in the transmigration area. On the contrary, significant differences proportions in community health perception in the group without social conflict experience before and after migration ($p <0.05$). The perception of community health in this group was better in the transmigration area.

Table 5. Perception of community health before and after migration by the experience of social conflict

Community health perception	Those with experience of social conflicts				Those without experience of social conflicts			
	N	Mean	SD	P	N	Mean	SD	P
Before migration	25	-.24	.92	.06	154	-.75	.54	.00*
After migration	25	-.64	.56		154	.01	.86	

*Significant different if $p < 0.05$

Note: Data calculation used Mc Nemar test of marginal homogenity and N is 179. Likert scale: (-2) Very uncomfortable, (-1) uncomfortable, (0) not different, (1) comfortable, (2) very comfortable

3.4 Environmental conditions

Table 6. Claims for environmental condition (percent of the people per year)

Environmental degradation	Before migration	1984 - 1995	2010
0. None	28.5%	8.3%	1.0%
1. Risk of tides rise.	28.5%	12.2%	4.3%
2. Nonproductive land.	1.0%	-	-
3. Soil sediment.	28.0%	-	-
4. Poor water quality	3.1%	1.5%	2.9%
5. Mangrove degradation.	-	11.7%	1.4%
6. Household garbage.	4.7%	15.1%	28.0%
7. Loss flora and fauna.	-	2.9%	1.9%
8. Forest clearing.	2.6%	15.1%	0.5%
9. Abrasion	0.5%	14.1%	19.8%
10. Water stagnation.	-	19.1%	40.1%
11.Productive land	3.1%	-	-
Cause of environmental degradation			
0. None	32.4%	10.3%	3.2%
1. Government policy.	-	5.9%	10.2%
2. Resettlement/Transmigration	24.0%	22.1%	3.8%
3. Fisheries activities.	1.1%	-	-
4. Deforestation.	5.0%	6.9%	4.3%
5. Infrastructure	-	4.4%	7.0%
6. Population growth.	1.7%	9.3%	11.8%
7. Abrasion.	-	4.9%	7.5%
8. Natural	29.1%	3.9%	3.2%
9. Harmful human activities	6.7%	31.4%	41.4%
10. Poverty problems	-	1.0%	7.5%

Note: Data calculation used multiple responses

As shown in Table 6, the migrants settled in places with risks of tides rise (28.5 percent), and sediment (28.0 percent) before migration. The risk of tides rise would have happened due to the loss of mangroves trees, and river sedimentation could have been caused by natural sedimentation and resettlement. After migration, environmental problems such as water stagnation (19.1 percent) and deforestation (15.1 percent) became prominent because more mangrove trees were destroyed due to natural exhaustion and humans cutting them down for

firewood and fishing gear/anchors (31.4 percent). The loss of the mangrove trees was fatal because the transmigration area was close to the coast (50 m), and seawater could easily enter into the residential areas.

In 2010, more people claimed water stagnation (40.1 percent) and coastal abrasion (19.8 percent) due to floods and clogged canals, and the village administration built artificial embankments to prevent severe abrasion. In addition, the number of transmigrants throwing their household garbage (28.0 percent) in the canal, yards and public places increased, since there was no garbage disposal system and they did not care about the garbage. It is clear that household garbage can lead to a decline in water quality.

3.5 Perception of environmental conditions

The items regarding of environmental conditions in the questionnaire were concerned with the comfort level of environmental qualities before migration and at present. The results of the t-test (Table 7) show that the variance and means of environmental condition perception of transmigrants (both groups) were significantly different before migration and in the present study period ($p < 0.05$).

Table 7. Differences of environmental perception of transmigrants (both groups with and without conflict experience) in before migration and present time (2010)

Environmental perception of transmigrants (both groups)	Paired Differences					
	Mean (Before migration)	Mean (After migration)	SD	P	95% CI	
					Lower	Upper
Time of before and present study period	-.68	.00	1.30	.00*	-.87	-.48

*Significant different if $p < 0.05$
Note: Data calculation uses t-Test and N is 179. Likert scale: (-2) Very uncomfortable, (-1) uncomfortable, (0) not different, (1) comfortable, (2) very comfortable

The change of perception of environmental condition was examined in both groups (Table 8). The McNemar test of marginal homogenity also applies to determine the differences in perception of environmental conditions before and after migration, similar to the perception of community health calculation. The right table shows significant differences between the present study period and before migration in the group with social conflict experience ($p<0.05$). The mean shows changes in the negative direction of the group with conflict experience. On the other hand, the perception of environmental conditions among those without social conflict experience (Table 8, right) was significantly different before migration and at present ($p<0.05$). The mean shows the positive direction of the group without experience with social conflict.

Table 8. Perception of environmental condition before and after migration by the experience of social conflict

Environmental condition perception	Those with experience of social conflicts				Those without experience of social conflicts			
	N	Mean	SD	P	N	Mean	SD	P
Before migration	25	.36	.90	.00*	154	-.85	.58	.00*
After migration	25	-.84	.55		154	.14	.86	

*Significant different if $p < 0.05$
Note: Data calculation used Mc Nemar test of marginal homogenity and N is 179. Likert scale: (-2) Very uncomfortable, (-1) uncomfortable, (0) not different, (1) comfortable, (2) very comfortable

3.6 Impact of perception on the future desire

People without experience with social conflict seemed to live comfortably in the transmigration area. However, 101 out of 154 (65.6 percent) had thoughts of moving to another location if they could get support from the government, e.g., adequate housing and appropriate environmental capacity to support their livelihood as fishermen, while this percentage was a little less than 84 percent (21/25) for those with experience with social conflict (Table 9). They were willing to move again to find a comfortable place to live or to find a job or a place with a lot of fish stock resources, and to improve their living standard (Table 9).

Table 9. The desire to move again to another place and their reasons

Those without experience of social conflicts	Reasons				Those with experience of social conflicts	Reasons			
	0	1	2	3		0	1	2	3
No	42	0	0	0	No	4	0	0	0
Yes	0	38	55	9	Yes	0	5	15	1
No answer	10	0	0	0	No answer	0	0	0	0

Note: Reasons are 0) No reasons, 1) To find a comfortable place, 2) To find a good job, 3) To improve living standard.

The logistic regression in Table 10 is intended to examine in more detail the factors that influence the migrants' desire to move, including their perception of environmental conditions and community health, SES and the presence of social conflict. The logistical regression showed only one factor—a job (2010)—that influenced their desire to move again to another area.

A factor that directly correlates is the difficulty of looking for a good job in the new area. Fishermen migrants have only small-capacity fishing gear in comparison to another newcomer, so the catch is also less than that of immigrant fishermen. Environmental factors and health no longer influence their desire to move, because only those who experience social conflict perceive the environmental degradation and health (25 respondents), while 154 respondents in the

non-conflict group had not been influenced by their perceptions of the environment and health.

Table 11 presents the results of the differences of means in each question and the reliability in four domains.

Table 10. Logistic regressions of migrant's desire to move with variables of perceptions at 1985 and 2010, their changes between 1985 and 2010, and SES at 1985 and 2010

	Independent variables	B	S.E.	Wald	df	Sig.	Exp(B)
Perception	Environment condition (1985)	-.136	.483	.079	1	.779	.873
	Environment condition (2010)	-.174	.446	.152	1	.696	.840
	Environmental changes (2010 - 1985)	.056	.400	.020	1	.888	1.058
	Community health condition (1985)	-1.152	1.041	1.225	1	.268	.316
	Community health condition (2010)	1.004	1.020	.970	1	.325	2.730
	Community health changes (2010 – 1985)	-.823	1.014	.660	1	.417	.439
SES	Ethnic	.208	.221	.890	1	.345	1.231
	Education	.159	.128	1.537	1	.215	1.172
	Job (1985)	-.102	.124	.667	1	.414	.903
	Job (2010)	-.155	.075	4.261	1	.039*	.857
	Income (1985)	.000	.000	.164	1	.685	1.000
	Income (2010)	.000	.000	.345	1	.557	1.000
Social conflict	Social conflict	-1.548	.839	3.403	1	.055	.213
Constant		1.890	1.176	2.582	1	.108	6.622

* Significantly different ($p < 0.05$)
Note: Variable in the Equation (logistic regression) and dependent is migrant's desire move (no = 0, yes= 1)

3.7 Comparison of QOL scores with and without social conflict experience

Social conflicts should have affected the QOL of the migrants. In the second research period, households (21 with and 24 without social conflict experience) were interviewed to determine the differences in QOL between the two groups.

The highest means of the question items in both groups are at the level of body image and appearance (Q19) and spirituality (Q6). The reliability of the physical domain is below 0.6; therefore it is poor. The low reliability may be caused by a small number of respondents (<100 respondents).

Table 11. Mean differences and reliability (Cronbrach's alpha) between the with conflict and without conflict samples by four domains of the WHOQOL-BREF

Domains	Questions items (Q)	With experience of social conflicts			Without experience of social conflicts		
		α	Md	Mean ± SD	α	Md	Mean ± SD
Physical	Pain and discomfort (Q3)	.41	2.00	1.86 ± .72	.59	2.00	1.71 ± .75
	Dependence on medication and treatments (Q4)		1.00	1.52 ± .60		1.00	1.54 ± .72
	Energy and fatigue (Q10)		2.00	2.10 ± .94		2.00	2.08 ± .65
	Mobility (Q15)		3.00	3.14 ± .72		3.00	3.21 ± .65
	Sleep and rest (Q16)		3.00	2.90 ± 1.04		3.00	2.96 ± .80
	Activities of daily living (Q17)		3.00	3.05 ± .80		3.00	2.92 ± .50
	Working capacity (Q18)		3.00	2.90 ± .70		3.50	3.38 ± .71
Physiological	Positive feelings (Q5)	.66	3.00	2.86 ± .65	.66	3.00	3.38 ± .49
	Spiritual/religion/personal beliefs (Q6)		4.00	3.62 ± .80		4.00	3.96 ± .69
	Thinking, learning, memory and concentration (Q7)		3.00	3.19 ± .40		3.00	3.38 ± .49
	Body image and appearance (Q11)		4.00	4.14 ± .94		5.00	4.46 ± .65
	Self esteem (Q19)		3.00	3.38 ± .86		3.00	3.50 ± .72
	Negative feelings (Q26)		2.00	2.38 ± .74		2.50	2.46 ± .58
Social Relationship	Personal relationship (Q20)	.68	3.00	2.76 ± .53	.66	3.50	3.38 ± .71
	Social support (Q22)		3.00	2.86 ± .65		3.00	3.38 + .49
	Sexual activity (Q21)		3.00	3.14 ± .65		3.00	3.33 ± .48
Environmental	Physical safety and security (Q8)	.78	3.00	3.05 ± .49	.69	3.00	3.33 ± .48
	Physical environment (infrastructures)(Q9)		2.00	2.19 ± .75		3.00	2.71 ± .95
	Financial resources (Q12)		2.00	2.00 ± .83		3.00	2.71 ± .69
	Oppurtunities for acquiring new information and skills (Q13)		2.00	2.00 ± .70		3.00	2.58 ± .58
	Participation and opportunities for recreation (Q14)		1.00	1.43 ± .50		2.00	1.96 ± .62
	Home environment (Q23)		2.00	2.19 ± .92		3.00	2.54 ± .77
	Health and social care, availabilty and quality (Q24)		3.00	2.90 ± .62		3.00	2.79 ± .83
	Transport (Q25)		3.00	2.57 ± .67		3.00	2.75 ± .94

Note: Md (median) and α (Cronbrach's Alpha). Reliability (< 0.6 "poor", 0.6 to < 0.8 "acceptable, > 0.8 "good")

Table 12 presents the results of the discriminant validity analysis by t-test. Significant mean differences were found between the group with and without experience with social conflict for the psychological, social and environmental domains.

Table 12. Discriminant Validity of the WHOQOL-BREF Assessment

Domains	With experience of social conflicts (Mean ± Sd)	Without experience of social conflicts (Mean ± Sd)	T value	Sig (2 tailed)
Physical Mean	38 .00 ± 8.75	38.25 ± 9.54	.248	.807
Psychological Mean	50.76 ± 11.50	58.67 ± 10.87	1.944	.046*
Social Mean	46.95 ± 11.47	59.13 ± 10.62	4.025	.001*
Environment Mean	34.05 ± 10.75	43.67 ± 11.26	2.115	.047*
Items				
Overall QOL	2.71 ± .72	3.1 ± .13	-.439	.666
General health	2.76 ± .89	2.79 ± .21	1.372	.183

*Siginificant direferent between with and without social conflict experience ($p<0.05$)
Note: t-Test with Welch's method

The scores in the psychological, social, and environmental domains were influenced by the group with and without social conflict experience, but areas of the physical and general health and overall QOL were not affected. The physical domain and two items of QOL were not significantly different between the groups. On the other hand, the domains of psychological health, social relationships and environment were significantly lower in the group with social conflict experience than those in the group without social conflict experience. The average of each domain was below 60 (score 0-100), and the overall items of QOL and general health were below standard [31].

4. Discussions

4.1 Change of Transmigration Program in Indonesia

Millions of people have migrated from populous areas such as Java, Madura and Bali to the less populous areas of Sumatra, Kalimantan, Sulawesi, Maluku and Papua Islands [32-35]. Sumatra Island has turned into big cities, and many migrants, farmers especially, could increase their income by cultivating the land provided or by being employed by plantations in the new area. As for the fishermen, their income is essentially unstable, depending on their skills and the technology of fishing gear.

The transmigration process had potentially tremendous impacts on the areas of migration in terms of resource-use and social relationships. In fact, social conflicts (different types of social conflicts than used in this study) occurred in transmigration areas such as Aceh, Kalimantan, Maluku, Papua and Lampung in 2000-2005 [7]. In 2007, the government reorganized the transmigration program with local resettlement and developed an integrated city with comfortable transmigration areas that account for socio-economic development and improvement of environmental quality and quality of life.

Fishermen transmigrants have different characteristics than farmer transmigrants that can influence their differences in SES, environment qualities, community health and QOL. Aspects of the environment qualities and community health cannot be separated from SES, which will ultimately determine the level of QOL. A correlation between fishermen in coastal areas and forest composition change, and they also observed interesting changes in the process of adaptation on the coast of East Sumatra [36].

4.2 Impact of transmigration on SES of fishermen

The migrants in Sumatra—including Lampung—could raise the quality of education, level of economy and welfare [11]. An improvement of QOL was achieved partly through government support in the transmigration area [12]. An improvement in SES, especially income, is very important because it is their major concern and motivation for migration. Furthermore, their income correlates with community health and the environmental quality of the transmigration area [37-39].

By the time of study in 2010, the income of the fishermen had increased constantly (that means the amount of fish catch increased), although it was still within the low-middle income level [40]. However, it is difficult for them to rapidly increase their while relying on small-scale fishing. Their parents fished as an occupation, and that is all they have done since they were children, so they had a little chance to get an education before they migrated. Low education made difficult for the fishermen that migrated to look for a new occupation, although some people became small business owners and earned more money than fishermen. Later, the government established primary and secondary schools in the transmigration area. However, 10 percent of the households moved into a new area near the border of the conservation area in the 1990s to get more fish. While ethnic difference did not have a significant effect on their income, the Bugis had bigger fishing gear to catch fish farther from the shoreline. The Bugis from Sulawesi have the skills to use static fishing gear, while the ethnic Sundanese and Javanese from the Java Islands use dynamic fishing gear.

4.3 Impact on transmigration on community health and environmental conditions

Health facilities and services improved in the transmigration area after migration. Today, a few migrants still find it difficult to go to the health center because of medical treatment fees, even though many migrants go there when they have health problems. However, for the group without experience with social conflicts, the perception of community health increased after migration in transmigration area. On

the contrary, the perception of community health of the group with experience with conflict did not increase after migration. Nevertheless, health seeking behavior in the migration area is better than those in the conservation area.

They realized that some environmental degradation such as water stagnation, abrasion and household garbage had become more serious, but they did not mention that these decreased their fish catch. Therefore, some people moved to the conservation area in 1996 not because of environmental degradation, but because of the will to get more fish. The perception of the environmental condition was also different between those with and without experience with social conflicts. The perception of environmental conditions of the group with experience with conflict did not increase after migration. These "bad feelings" about the environmental conditions in 2010 significantly attributed to the desire for another migration, although the rate of willingness to move again (as far as government supports are provided) did not markedly differ between the two groups.

The WHOQOL-BREF in both groups of transmigrants intended to give an overview of their QOL in the transmigration area. A limited number of respondents that took this test could not give the exact description of their QOL or if there was bias, but at least we can see the difference in the level of QOL between the groups with and without experience with social conflict. It is understood that except for physical domains, scores were by far lower in the group with experience with social conflicts than those without, while the generally low QOL score of each domain may reflect the characteristics of migrants such as low education level, low income and perception of environmental degradation.

5. Conclusion

This study subjected transmigrated fishermen, on whom little attention has been paid in the evaluation of transmigration program in Indonesia. In summary, SES of migrants, especially their income, improved by migration. The community health also improved with establishment of health seeking behavior in the transmigration area. While environmental degradations happened after settlement, however it was not the trigger for illegal migration to the conservation area. Perceptions of community health and environmental condition generally become better at present except for the groups with experience of social conflicts in the conservation area. This uncomfortable perception of environmental condition among those with experiment of social conflicts was related to the desire for another migration, but it seemed difficult because government support is hardly obtained at present. As expected, QOL scores of fishermen were generally low, especially among those experienced social conflicts.

Acknowledgements:

We would like to express our thanks to the village administrative and community members. The research was not possible without their supports, hard works and endless efforts.

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