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# THE EFFECTS OF UNCONDITIONAL CASH TRANSFER ON THE MENTAL HEALTH OF UNDERPRIVILEGED HOUSEHOLDS IN INDONESIA

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## Abstract

Less profitable socioeconomic factors could cause mental health problems like depression and stress symptoms. Previous studies have investigated the effect of cash transfers on physical health, education, and socioeconomic status. However, this study tends to investigate the effects of BLT and BLSM unconditional cash transfers on the mental health of the underprivileged households in Indonesia. In measuring mental health scores, we provide CES-D score with a score range of 0-30, which higher score means better mental health. Using IFLS 2007 and 2014 data and applying the Two-Stage Least Squared method, we found that BLT and BLSM recipients experienced an increase in mental health score by 1.5 points or 6.3% of the CES-D mean score. Our study also suggests that cash transfers affect the mental health of the recipients through two channels: psychological health, i.e., religiosity; and physical health, i.e., the number of disease symptoms. These programs have the potential to increase an individual's religiosity and reduce the number of disease symptoms, hence, can enforce mental health improvements.

**Keywords:** health mentally, unconditional cash transfer, instrumental variable estimation.

## Introduction

Mental health is an essential part of individual health and it plays its role in social life and economic development. Mental disorders could degrade someone's ability and often lead to disability and suicide (WHO, 2012). This issues also affect the economic costs in society through productivity loss (Beer et al., 2001) and income (Lund et al., 2010). However, mental disease in developing countries tends to increase and less prioritized, as well as in Indonesia. The prevalence of mental and emotional disorders like anxiety disorders and depression in Indonesia increased 6.1% of the total adult population in 2018. More than 19 million people over the age of 15 suffer from mental and emotional disorders, and more than 12 million people of them experience depression. Ministry of Health (2011) estimated that mental illness in Indonesia accounted for losses of IDR 20 trillion (USD 2 billion; 0,5% of GDP) in 2007, and it continues to increase along with the increase of mental illness and mental disorder every year. Along with the deteriorating mental health condition of the population, the condition of poverty in Indonesia is also

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pretty concerning. Indonesia's economic growth was relatively stable at 5-6% before Covid-19 pandemics, but nearly half of the population there (43.3%) were living below the poverty line of USD 2 per day (World Bank, 2013).

Earlier studies revealed that there is a strong connection between poor mental health and poverty. Less profitable socioeconomic factors could cause mental health problems (Das et al., 2007). The lower-income individual tends to be more vulnerable to more severe poverty, especially when the country experienced an economic shock, such as Covid-19 pandemic, global crisis, and fuel price increasing. Economic shocks, in the end, are affecting the underprivileged households' mental health and become increasingly worse. Hence, they tend to increase depression and stress symptoms. The connection between poverty and mental health becomes a concern because tackling poverty is always the core of formulating development policy.

One of the efforts to reduce poverty made by the government is to provide cash transfers to underprivileged households. Previous studies in Indonesia have investigated the effect of cash transfers on physical health (Aizawa, 2020; Triyana et al., 2017), education (Anindita et al., 2018), and socioeconomic status (Cahyadi et al., 2018). However, recent studies abroad have found that cash transfers can also affect an individual's mental health because the cash transfer program is intended to suppress poverty, investigating the effect on mental health became relevant (Ohrnberger et al., 2020). In theory, there is no consensus on the effect of cash transfers to mental health, it can be positive, negative, and zero, depends on the behavior of the recipient (Grossman, 1972). Studies were conducted in South Africa and Sub-Saharan Africa to identify the positive impacts of cash transfer on mental health (Ohrnberger et al., 2020; Baird et al., 2013; and Eyal & Burns, 2019). Direct cash had a positive impact on mental health as to increase household income and provide financial security psychologically (Lund, 2012). However, the increase in income also had the potential to cause mental health disorders through the increase of consumption of unhealthy goods like alcohol and cigarettes (Gaarder et al., 2010). Furthermore, cash transfers could also have no impact on mental health if the cash does not change the recipient's behavior (Fernald et al., 2011; Paxson et al., 2010). The relationship between cash transfers and mental health needs to be taken into account, but empirical discussion of this issue is rarely discussed in Indonesia. Therefore, this study attempts to investigate the effect of Indonesian government cash transfer on the mental health of underprivileged households.

Bantuan Langsung Tunai (BLT) is one of the unconditional cash transfers distributed by the government to underprivileged households in 2005. At that time, BLT was intended to balance the increasing price of world oil and reduce subsidies in fuel oil. A similar cash transfer program was implemented again in 2012 as compensation for the inflation effects after an increase in oil price under the name Bantuan Langsung Sementara Masyarakat (BLSM). In terms of concept, BLSM has a similar impact to BLT, which provides an income effect to the targeted households by reducing household expenses. World Bank (2012) revealed that BLT positively impacted household welfare and did not form a household dependency. Through their qualitative analysis, Hossain et

al. (2012) also concluded that BLT had helped the household quicken their consumption. Furthermore, Khomaini (2020) specifically found that temporary cash transfers such as BLT also increase the satisfaction of recipient families.

Cash transfer programs affect recipients' mental health through the various channel transmission mechanisms. Previous studies found that Zomba Cash transfer programme for Malawian schoolgirls positively affects their mental health through consumption, social interaction and self-rated health mediators (Baird et al., 2013), and unconditional cash transfer in Malawian's youth mental health was mediated through education, social support and caregiver wellbeing (Angeles et al., 2019). Furthermore, Ohrnberger et al. (2020) also find that physical health and lifestyles are identified as significant mediators of the cash transfer and mental health relationship. To complement the variety of mediators that have been studied previously, this study attempts to investigate the mediators that best suit to Indonesian population's characteristics, such as physical health and religiosity. The religiosity mediator is an important channel because most of the Indonesian population adheres to a certain religion and tends to influence their behavior and mental health.

Empirical testing to determine a causal relationship between cash transfer and mental health needs to consider the existing endogeneity problems. Endogeneity problems that are not handled properly will result in biased estimates. Therefore, this study estimates the BLT and BLSM unconditional cash transfer effects on mediators and individual mental health using instrumental variables by applying the Two-Stage Least Squared method. To address the variable of cash assistance acceptance status, this research implemented the education attainment of the households' heads as an instrumental variable. The results showed that this unconditional cash transfers could improve an individual's mental health. The result also suggest that these programs have the potential to increase an individual's religiosity and reduce the number of disease symptoms as mediators, hence, can enforce mental health improvements. Therefore, our research contributes not only discusses the impacts of cash transfers to a mental health aspect, but also explains the transmission of cash transfers effects on individual mental health through the mediators.

The paper is structured as follows: the first section presents the study background; the second section describes the UCT programme, religiosity, and phisical health aspects; the third section describes the data and methods; the fourth section presents the descriptive statistics and results; and the fifth section discusses the results and concludes.

## Research Methods

### *Data*

The data used in this research were secondary data derived from the Indonesian Family Lifetime Survey (IFLS) wave 4 in 2007 and wave 5 in 2014. The study used the data of 2007 as a baseline and 2014 as the endline, with 5935 observed individuals. Independent variable (status of receiving unconditional cash transfer), outcome variable (CES-D score), and mediator (physical health and religiosity score perception) in this

study used endline data (IFLS year 2014). Meanwhile, the control variables used baseline data (IFLS year 2007) to explains about household's characteristics before receiving social assistance. The using of baseline control variables is intended to avoid the existence of reverse causality between baseline characteristics and other research variables (Ohrnberger, 2020). The characteristics of the studied population were people aged 15 years or more to specifically investigate the problems of demographic, socioeconomic, physical helath, and mental health experienced by adults. Furthermore, this research employed a sample of underprivileged individuals, who are people living in households with spending lower than USD 3.2 per day (Dartanto et al., 2019) and have not received the BLT and BLSM supports during the baseline period.

***Empirical Strategy***

Unconditional cash transfer distributed to underprivileged households affects the individuals' mental health. Grossman's (1972) health capital model and its extensions explain that mental health has a direct effect on utility, and this utility is associated with a good individual mental health (Ohrnberger, et al., 2020). In analyzing the direct impact of BLT and BLSM unconditional cash transfers on the mental health of the underprivileged households in Indonesia, this study used *Two-Stage Least Square* (2SLS) equation as follows:

$$CES_i = \beta_0 + \beta_1 \widehat{UCT}_h + \beta_2 K_i + v_i \quad (1)$$

$CES_i$ is an individual's mental health score measured using the 10-item *Center for Epidemiological Depression Scale* (CES-D) with a score range of 0-30. The higher the score, the better the individual's mental health; $\widehat{UCT}_h$ is the status of receiving unconditional cash transfer. It scores 1 if there is at least one recipient in a household and 0 if there is no recipient in a household; $K_i$ is a control variable in the form of demographic factors (gender and marital status), household factors (age of the head and number of members), lifestyle factors (smoking status, number of sick days, and perception of life satisfaction), and settlement factors (*dummy* island and rural-urban status); and $v_i$ is an *error term.*

CES-D Scale is a measurement instrument of depression level that has been utilized in a series of longitudinal studies, can be validated for the underdeveloped and developing countries, and can produce stable depression measurements from time to time (Ali et al.,2016). CES-D scale includes ten questions that can be used as a reference for this mental health measurement, namely (1) " Feeling disturbed by things that are usually not disturbing "; (2) "Experiencing difficulties to concentrate on an activity"; (3) "Feeling depressed"; (4) "Feeling that activities require a lot of efforts"; (5) "Having good expectations about the future"; (6) "Feeling afraid"; (7) "Having trouble sleeping"; (8) "Feeling happy"; (9) "Feeling isolated"; and (10) "Being unable to start something ". Of those ten questions, individuals are asked to answer how often or what is the frequency of the feeling in those questions that they experienced in the past one week. The scale ranges are Never or Very Rarely (less than one day) is given 0 points; Rarely (1-2 days)

is given 1 point; Sometimes (3-4 days) is given 2 points; and Often (5-7 days) is given 3 points.

Of the ten questions related to symptoms of depression, questions (5) and (8) were measured by using a reversed scale so that all of the questions reflect an increase of depression symptoms severity (Radloff, 1977). All the points that have been answered were then summed up to determine the individuals' total scale of the CES-D, which are considered to be continuous and generally ranging of mental health from the best to worst. Nevertheless, to assist the interpretation, the CES-D measurement scale in this research is reversed so that the collected score of CES-D ranges from 0 to 30, with a higher value referring to better mental health. A CES-D cut-off score of 20 or lower indicates significant depressive symptoms, while a CES-D score of more than 20 indicates better mental health.

The measurement of the relationship between the status of receiving assistance and mental health using *Ordinary Least Squared* (OLS) model could cause endogeneity problem. The issue of endogeneity in the OLS equation caused the estimation results obtained inclined to be biased and inconsistent. Therefore, to overcome the problem, this study used 2SLS using variable instruments. Based on these considerations, this study compiled the first stage of 2SLS equation as follows:

$$UCT_h = \alpha_0 + \alpha_1 educyr_h + \alpha_2 K_h + u_h \quad (2)$$

$UCT_h$ is the status of receiving unconditional cash transfer (scored 1 if there is at least one recipient in a household and 0 if there is no recipient); $educyr_h$ is the instrumental variable, which is the number of school years of the household's head; $K_h$ is a control variable; and $u_h$ is an *error term*. This research implemented the education attainment of the households' heads as an instrumental variable (IV) in explaining the variable of social assistance acceptance status. The variable can explain the level of education obtained by the head of a household, and it is calculated from the number of education years. Based on the criteria of receiving unconditional cash transfer of BLT and BLSM, which includes the criteria of low education level for the recipients, the variable of education attainment is allegedly able to explain the status of aid acceptance adequately.

There are at least several assumptions in determining instrumental variables: relevance conditions, monotonicity, exchangeability, and exclusion restriction (Lousdal, 2018). In examining the relevance conditions aspect, we consider the role of head's education level as an eligible criterion to receive BLT and BLSM assistance. Moreover, compared to other eligible criteria, the education level criterion of the head of household had the highest percentage (70 percent) of fulfillment by BLT and BLSM recipients in the underprivileged households. To test the fulfillment of the monotonicity assumption, this study utilized a local polynomial graph of the instrumental variables to ensure that the instrumental variables used are acceptable. We found the clear monotonicity or trend of a one-way relationship between the household head's educational attainment and the status of receiving cash transfers for BLT and BLSM, which means that cash transfers

tend to be received by heads of households with lower education. The following assumptions are exchangeability and exclusion restriction, but these aspects are untestable or challenging to test. The instrumental variable of the household's head's education attainment could have some limitations to meet exclusion restriction assumption. Since mental health is a multidimensional issue, then there is a potential relationship between its numerous influential factors (WHO, 2014), including the instrumental variable of this study. Additionally, education attainment is also presumed to have a possible influence on other control variables that affect individual mental health. Therefore, caution in using education attainment as an instrumental variable to examine the effect of cash transfers on mental health is needed.

Unconditional cash transfer also related to other important factors that we treat as control variables, namely demographic, household, lifestyle, and residential location factors. Demographic factors consisted of individual gender and marital status; household factors associated with the age of household head and numbers of member; lifestyle factors are explained by smoking status, number of sick days, and perception of life satisfaction; and residential location factors are composed of rural-urban status and island control that accommodate the diversity of conditions and cultures between islands in Indonesia.

***Mediator Role***

Unconditional cash transfer affects the individuals' mental health through some other variables, such as physical health mediator (Ohrnberger, 2020) and psychological health mediator, namely religiosity (Buser, 2015). Cash transfer can potentially improve an individual's physical health, such as decreasing symptoms of diseases. In Grossman's model, physical health supported by cash assistance can affect mental health in two ways. First, the period of health can be used for productive activities or gaining income and can be spent for beneficial activities for physical health in the future. Second, this better physical health directly affects mental health in the present time and is becoming an investment in mental health in the future.

Besides as a mediator of physical health, unconditional cash transfer can also potentially improve the psychological health of the individuals, such as the perception of obedience in religious practices or religiosity. Increase of income through financial support allowed more time for people to attend a place of worship and, at the same time, improve their social status (Buser, 2015). This better perception of religiosity directly impacted mental health. Religiosity brought lower psychological pressure to individuals (Ellison et al., 2001), better life satisfaction, and a lower possibility of depression (Lim and Putnam, 2010).

This study investigated the effects of cash transfers through mediators in advance and then connected the effects to an individual's mental health. We estimated two additional equations, namely, the effect of cash transfers on the mediator and the effect of the mediator on mental health.

$$M_i = \gamma_0 + \gamma_1 \widehat{UCT_h} + \gamma_2 K_i + \varepsilon_i \quad (3)$$

Equation (3) is the second stage of estimating instrumental variable after equation (1), which explained the effect of unconditional cash assistance on the mediator. $M_i$ is the mediator and $\varepsilon_i$ is the *error term.* To continue to equation three about the influence of the mediator on mental health, the *treatment* variable, the status of receiving unconditional cash transfers, must significantly influence the mediator. Next, to investigate the effect of mediators on mental health, the second stage equation was equation four below:

$$CES_i = \delta_0 + \delta_1 \widehat{M}_i + \delta_2 K_i + \lambda_i \quad (4)$$

$CES_i$ is the individual's mental health score; $\widehat{M}_i$ is the mediator estimated from equation (3); and; $\lambda_i$ is an *error term.* M is considered a mediator of the relationship only if there is a significant effect of $\gamma_1$ in equation three, and there is also a significant effect of $\delta_1$ in equation (4) (Keele, 2015). In addition, equation (4) is estimated for each mediator separately so that the mediators do not influence each other.

Physical health mediator is explained by the number of disease symptoms which described using a *dummy* of 0 if the individual reports are not experiencing any symptom disease and 1 if the individual reports are experiencing some diseases in the last four weeks. According to Baird *et al*. (2013), the variable of disease symptoms experienced during the previous four weeks can explain changes in an individual's physical health in the short term. Furthermore, psychological health mediator is explained by individuals' levels of religiosity. The variable of religiosity level perception can be categorized into two: 0 for individuals perceived as less devout/non-religious, and 1 for individuals perceived as devout/religious persons.

## Results and Discussion

### *Descriptive Analysis*

Before discussing the study results, it is essential to explore research data in the early stages of analysis. Figure 1 and 2 illustrates the distribution of mental health score data for the treatment and control groups in the period before and after the cash transfer program. Figure 1 shows the individual mental health data distribution before the cash transfer intervention is given (baseline), while Figure 2 displays the mental health data distribution after the cash transfer is given (endline). The treatment and control groups had relatively identical average mental health scores in the baseline period, 26.1 points for the treatment group and 25.9 points for the control group. Meanwhile, in the endline period, there were differences in mental health scores between the beneficiary and non-beneficiary groups. The beneficiary group tended to have a relatively higher mental health mean score (23.9 points) than the non-beneficiary group (23.2 points). It indicates that unconditional cash transfers stimulate improvement in the underprivileged group's mental health. This initial exploratory description of the relationship between unconditional cash transfers and mental health in underprivileged households resulted in an assumption of a relationship in line with the hypothesis. Therefore, further estimation by using a two-stage least square statistical model to ensure a causal relationship between them is needed. However, because there is a significant difference in CES-D scores between 2007 and

2014 caused by differences in the calculation technique in the IFLS questionnaire, this study will attempt to investigate the relationship between the two by using cross-sectional data on CES-D scores in 2014 only.

**Figure 1**
**Distribution of mental health score data (CES-D) for the baseline period (2007)**

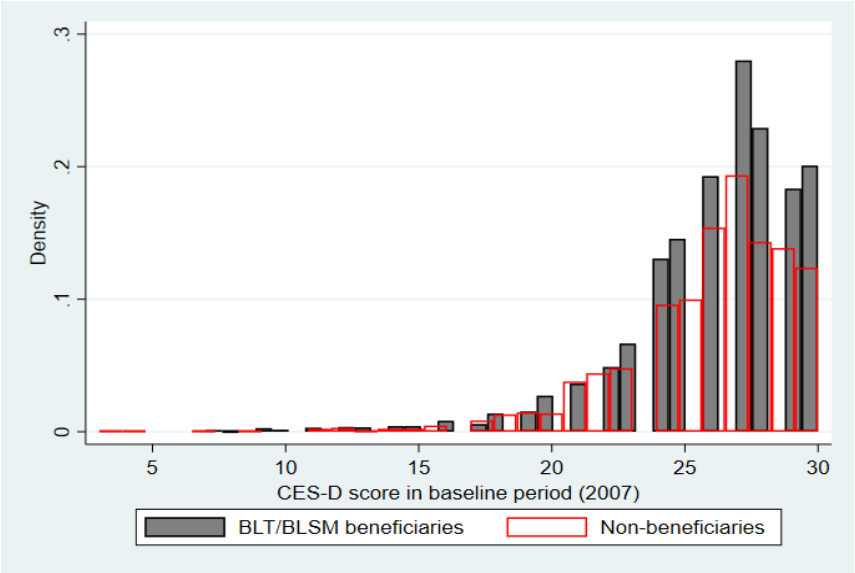


**Figure 2**
**Distribution of mental health score data (CES-D) for the endline period (2014)**

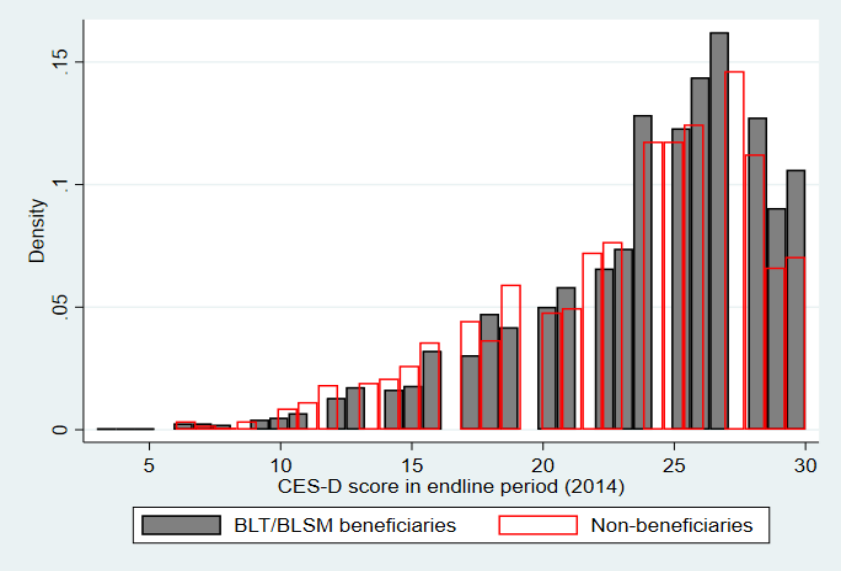


Table 1 summarizes descriptive statistics on the variables used for the complete sample of individuals living in beneficiary and non-beneficiary households of unconditional cash transfers. Based on the information, it can be observed that beneficiaries of unconditional cash transfers have a slightly higher mean CES-D score

(23.9) than non-beneficiary cash transfer (23.2) in 2014. The beneficiary of unconditional cash transfers also tended to have higher spirituality or religious observance levels and experience fewer disease symptoms than non-beneficiaries in the endline period.

**Table 1**
**Summary of Research Variable Statistics**

| Variables | Beneficiaries (n=1295) | Non-Beneficiaries (n=4640) | Mean difference of Beneficiaries and Non-Beneficiaries (t-test) |
|---|---|---|---|
| | Mean (SD) | Mean (SD) | |
| *Outcome variable* | | | |
| CES-D 2007 | 26,159 (3,317) | 25,974 (3,359) | 1,485 |
| CES-D 2014 | 23,933 (4,747) | 23,204 (4,945) | 4,801*** |
| *Mediator in baseline period (2007)* | | | |
| Religiosity perception | 1,811 (0,551) | 1,804 (0,549) | 0,003 |
| Number of symptom diseases | 2,028 (1,992) | 2,089 (2,028) | -1,195 |
| *Mediator in endline period (2014)* | | | |
| Religiosity perception | 1,943 (0,666) | 1,939 (0,714) | 0,900* |
| Number of symptom diseases | 2,770 (2,225) | 2,930 (2,346) | -1,851* |
| *Instrument variable (endline=2014)* | | | |
| Household head's years of schooling | 6,305 (3,756) | 8,014 (4,410) | -13,154*** |
| *Control variable (baseline=2007)* | | | |
| *Demographic factor* | | | |
| Male | 0,445 | 0,453 | -0,532 |
| Married | 0,840 | 0,837 | 0,278 |
| *Household factor* | | | |
| Age | 43,082 (14,147) | 45,668 (13,644) | -5,867*** |
| Number of members | 4,591 (1,781) | 4,331 (1,821) | 4,604*** |
| *Lifestyle factor* | | | |
| Smoking | 0,319 | 0,295 | 1,577 |
| Number of sick days | 2,606 (5,336) | 2,073 (4,622) | 3,256*** |
| Perception of life satisfaction | 2,011 (0,491) | 1,971 (0,511) | 2,543** |
| *Residential location factor* | | | |
| Urban | 0,448 | 0,393 | 3,510*** |

The study requires a mean difference examination of mental health scores, religiosity levels, and the number of disease symptoms in the treatment and control groups at baseline (2007) to determine the individual's condition before receiving unconditional cash transfers. The t-test results indicated no significant differences in the mental health scores, level of religiosity, and number of disease symptoms between the treatment and control groups at baseline, which reduces the potential for selection bias in the observed sample. However, there were significant differences in the eligible criteria for beneficiaries, such as length of education for the head of the household and household factors such as defecation facilities, clean drinking water sources, and types of cooking fuel. Therefore, an instrumental variable from the eligible criteria is required to determine the status of receiving cash transfers.

In the endline conditions (2014), Table 1 presents the results of the t-test examination of research variables as an initial stage investigation to explore the difference in outcomes between the beneficiary and non-beneficiary groups. The results revealed significant differences in the mental health mean scores, level of religiosity, and the number of disease symptoms between the two groups, with the beneficiary group having higher mental health and religiosity scores and fewer disease symptoms than the non-beneficiary group. These findings suggest that cash transfers obtained in the baseline period affect outcome variables and mediators in underprivileged individuals. Further empirical testing using a two-stage least square statistical model is required to confirm this assumption.

***The Impact of Unconditional Cash Transfer on the Mental Health of Underprivileged Households***

The second stage of estimation in Table 2 shows that receiving unconditional cash transfers in underprivileged households can increase mental health scores by 1.5 points or 6.3% of the mean CES-D score. This finding supports previous empirical research which found that unconditional cash transfers can improve mental health in underprivileged households. For example, the Child Support Grant (CSG) unconditional cash transfer in South Africa improved adult mental health by 0.823 points or 4% of the CES-D mean score, and the Social Cash Transfer Program (SCTP) in Malawi reduced adolescent depression scores by 2,277 points or 11.5% of the CES-D mean score. Similarly, retirement cash transfers in China for the elderly improved their mental health by 6.2 points or 7.9% of the CES-D mean score.

**Table 2**
**Estimated results of Unconditional Cash Transfers (UCT) receipt status and other control variables on mental health scores of underprivileged individuals**

| Variables | OLS (*Dependent Variable*: CES-D score) | *First Stage 2SLS* (*Dependent Variable: Status of r*eceiving UCT) | *Second Stage 2SLS* (*Dependent Variabl*e: CES-D score) |
|---|---|---|---|

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| HH Head's years of schooling | | -0,016*** | -0,019*** | | |
| | | (0,001) | (0,001) | | |
| HH receives UCT | -0,500 | | | 0,512** | 1,532** |
| | (1,138) | | | (0,913) | (0,789) |
| HH Head's age | 0,026* | | -0,004*** | | 0,031*** |
| | (0,004) | | (0,000) | | (0,005) |
| Male | 0,306* | | -0,003 | | 0,361** |
| | (0,157) | | (0,015) | | (0,172) |
| Married | 0,815** | | -0,027* | | 0,797*** |
| | (0,170) | | (0,015) | | (0,173) |
| Numbers of HH | -0,040 | | 0,017*** | | -0,096*** |
| | (0,032) | | (0,003) | | (0,036) |
| Smoking | -0,321* | | 0,021 | | -0,356* |
| | (0,172) | | (0,016) | | (0,189) |
| Number of sick | -0,159** | | 0,003** | | -0,170*** |
| | (0,012) | | (0,001) | | (0,013) |
| Life satisfaction perception | 1,152** | | -0,013 | | 1,201*** |
| | (0,124) | | (0,011) | | (0,127) |
| Urban | -0,054 | | 0,058*** | | -0,098 |
| | (0,118) | | (0,011) | | (0,129) |
| Island dummy | Yes | Yes | Yes | Yes | Yes |
| F-statistic | - | 166,47 | 221,31 | 164,07 | 221,31 |
| Number of observations | 5935 | 5935 | 5935 | 5935 | 5935 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

To summarize, the study estimates the effect of unconditional cash transfers on the mental health of underprivileged households in Indonesia, and investigates the role of religiosity and physical health as mediators. The study finds that cash transfers have a positive effect on mental health, and this effect is mediated by religiosity. The study also shows that individuals who are more religious had more significant mental health improvements compared to those who are not religious. The household head's low educational level is the most dominant criterion met by the recipients of cash transfers. The instrumental variable of household head's educational attainment is used to estimate the effect of cash transfers on mental health, and the study finds that the instrument used is non-weak and exogenous to the outcome variable. The study also identifies demographic, household, lifestyle, and place of residence factors that affect the status of receiving unconditional cash transfers and mental health outcomes. The study suggests that cash transfers can act as an investment in individual mental health, reducing stress symptoms and intervening in individual mental health both short and long term.

***The Effect of Unconditional Cash Transfer on Mental Health through Religiosity Mediators***

In explaining the transmission of unconditional cash transfer effect on the individual mental health, this study investigated the mediator role of individual religiosity as a channel that connects the two. Table 3 presents the estimation results of the unconditional cash transfer effect on religiosity mediators to explain individual mental health. In line with previous research conducted by Buser (2015), this study showed that unconditional cash transfers had a positive and significant effect on individual religiosity. This study revealed as shown in column (2) that beneficiaries were 36.9 percentage points more likely to be religious than non-beneficiaries, or in other words, cash transfers stimulated individuals to be more religious than non-beneficiaries. Increasing income through cash transfers can spare an individual's time previously used for work to perform worship activities or attend various religious activities to develop the individual's perception of religiosity. In addition to unconditional cash transfers, other factors were found that influenced individual religiosities, such as age, marital status, perception of life satisfaction, and place of residence. Older and married individuals had a higher perception of life satisfaction and lived in rural areas tended to be more religious.

**Table 3**
**The effect of unconditional cash transfers (UCT) on mental health through religiosity mediators**

| Variables | UCT to religiosity mediator | | Religiosity mediator to mental health score | |
|---|---|---|---|---|
| | *Second Stage* (*Dependent Variable:* Religiosity) | | *Second Stage* (*Dependent Variable*: CES-D score) | |
| | (1) | (2) | (3) | (4) |
| Religios | | | 0,962** | 4,150** |
| | | | (1,701) | (2,165) |
| HH receives UCT | 0,532*** | 0,369*** | | |
| | (0,087) | (0,071) | | |
| HH Head's age | | 0,003*** | | 0,018*** |
| | | (0,001) | | (0,006) |
| Male | | -0,013 | | 0,415** |
| | | (0,015) | | (0,179) |
| Married | | 0,061*** | | 0,545*** |
| | | (0,015) | | (0,210) |
| Numbers of HH member | | -0,008*** | | -0,069* |
| | | (0,003) | | (0,037) |
| Smoking | | -0,090*** | | -0,018 |
| | | (0,017) | | (0,248) |
| Number of sick days | | -0,002** | | -0,161*** |
| | | (0,001) | | (0,013) |
| Life satisfaction perception | | 0,005*** | | 0,992*** |

| | | | | |
|---|---|---|---|---|
| | | (0,011) | | (0,153) |
| Urban | | -0,062*** | | 0,161 |
| | | (0,011) | | (0,172) |
| Island dummy | Yes | Yes | Yes | Yes |
| F-statistic | 166,47 | 221,31 | 49,57 | 31,59 |
| Number of observations | 5935 | 5935 | 5935 | 5935 |

Additionally, Table 3 and column (4) shows that religiosity affected by unconditional cash transfers increases an individual's mental health score by 4.2 points or 17.7% of the CES-D mean score. It shows that individuals who were more religious had better mental health than individuals who were not religious. This study is in line with Ellison et al. (2001), who revealed that religious individuals were found to have better mental health. Lim & Putnam (2010) confirmed that religious individuals tended to experience less psychological stress, have greater life satisfaction, and have a lower possibility of developing depressive disorders. Because religiosity was significantly influenced by the interest variable (unconditional cash assistance) and substantially affected the outcome variable (mental health), it can be conveyed that religiosity is a good mediator in connecting the relationship between the two (Ohrnberger et al., 2020).

**Table 4**
**The effect of unconditional cash transfer (UCT) on mental health by religious group**

| Variables | Non-religious group | | Religious group | |
|---|---|---|---|---|
| | *First Stage* (*Dependent Variable:* Status of receiving UCT) | *Second Stage* (*Dependent Variable:* CES-D score) | *First Stage* (*Dependent Variable:* Status of receiving UCT) | *Second Stage* (*Dependent Variable:* CES-D score) |
| | (1) | (2) | (3) | (4) |
| HH receives UCT | | 0,506* | | 1,106* |
| | | (1,788) | | (0,887) |
| HH Head's years of schooling | -0,021*** | | -0,018*** | |
| | (0,003) | | (0,001) | |
| Demographic factor | Yes | Yes | Yes | Yes |
| Household factor | Yes | Yes | Yes | Yes |
| Lifestyle factor | Yes | Yes | Yes | Yes |
| Residential location | Yes | Yes | Yes | Yes |
| Island dummy | Yes | Yes | Yes | Yes |
| F-statistic | 44,15 | | 169,15 | |
| Number of observations | 1216 | 1216 | 4719 | 4719 |

This study found that cash transfers have a linear effect on mental health through

the mediator of religiosity, as shown in Table 3. To further examine the impact of cash transfers on the mental health of underprivileged households, the study investigated the effect according to their religious groups. The results presented in Table 4 show that the more religious group responded better to cash transfers in terms of mental health improvement compared to the non-religious group. The study suggests that cash transfers can provide additional free time for individuals to participate in religious and worship activities, which may increase their level of religiosity. Previous research has shown that more religious individuals have higher life satisfaction and a lower risk of developing depressive disorders.

***The Effect of Unconditional Cash Transfer on Mental Health through Physical Health Mediator***

In this study, physical health was examined as a mediator between the relationship of unconditional cash transfers and individual mental health. Physical health was measured using a dummy variable indicating the number of disease symptoms experienced by each individual in the last four weeks. Those without disease symptoms were considered to have better health than those with disease symptoms. Table 5 presents the results of the estimation of the effect of unconditional cash transfers on the physical health mediator and its subsequent impact on mental health. Columns (1) and (2) show the effect of unconditional cash transfers on the number of disease symptoms mediator, while columns (3) and (4) show the role of the number of disease symptoms mediator on the mental health of underprivileged households, as described earlier.

**Table 5**
**The effect of unconditional cash transfer (UCT) on mental health through number of disease symptoms mediator**

| Variables | UCT to number of disease symptoms mediator | | Number of disease symptoms mediator to mental health score | |
|---|---|---|---|---|
| | *Second Stage* (*Dependent Variable:* number of disease symptoms mediator) | | *Second Stage* (*Dependent Variable*: CES-D score) | |
| | (1) | (2) | (3) | (4) |
| Number of disease symptoms (> 0 disease) | | | -1,162*** | -3,722** |
| | | | (2,023) | (1,897) |
| HH receives UCT | -0,454*** | -0,410*** | | |
| | (0,081) | (0,085) | | |
| HH Head's age | | -0,004*** | | 0,020*** |
| | | (0,001) | | (0,005) |
| Male | | -0,044*** | | 0,200 |

| | | | | |
|---|---|---|---|---|
| | | (0,014) | | (0,178) |
| Married | | -0,019 | | 0,722*** |
| | | (0,014) | | (0,172) |
| Numbers of HH | | 0,009*** | | -0,062** |
| | | (0,003) | | (0,034) |
| Smoking | | 0,037*** | | -0,216 |
| | | (0,015) | | (0,187) |
| Number of sick days | | 0,013*** | | -0,119*** |
| | | (0,001) | | (0,026) |
| Life satisfaction perception | | -0,044*** | | 1,039*** |
| | | (0,010) | | (0,137) |
| Urban | | 0,059*** | | 0,122 |
| | | (0,010) | | (0,156) |
| Island dummy | Yes | Yes | Yes | Yes |
| F-statistic | 164,23 | 221,31 | 39,02 | 43,29 |
| Number of observations | 5935 | 5935 | 5935 | 5935 |

To summarize, the study found that unconditional cash transfers can improve the physical and mental health of underprivileged individuals. Cash transfers have a linear effect on mental health through physical health mediation, but the effect is stronger for individuals without disease symptoms. The study also found that unconditional cash transfers could reduce an individual's probability of having more disease symptoms, which indicates an improvement in physical health. Demographic and lifestyle factors such as gender, smoking, and living in urban areas were found to have an impact on disease symptoms. Finally, the study showed that disease symptoms had a negative effect on mental health, with individuals with more symptoms having lower mental health scores.

**Table 6**
**The effect of unconditional cash transfer (UCT) on mental health by group number of disease symptoms**

| Variables | Group without disease symptoms | | Group with disease symptoms | |
|---|---|---|---|---|
| | *First Stage* (*Dependent Variable:* Status of receiving UCT) | *Second Stage* (*Dependent Variable:* CES-D score) | *First Stage* (*Dependent Variable:* Status of receiving UCT) | *Second Stage* (*Dependent Variable:* CES-D score) |
| | (1) | (2) | (3) | (4) |
| HH receives UCT | | 0,923* | | 0,438* |
| | | (0,877) | | (1,659) |

| | | | | |
|---|---|---|---|---|
| HH Head's years of schooling | -0,016*** | | -0,019*** | |
| | (0,003) | | (0,001) | |
| Demographic factor | Yes | Yes | Yes | Yes |
| Household factor | Yes | Yes | Yes | Yes |
| Lifestyle factor | Yes | Yes | Yes | Yes |
| Residential location | Yes | Yes | Yes | Yes |
| Island dummy | Yes | Yes | Yes | Yes |
| F-statistic | 30,22 | | 186,36 | |
| Number of observations | 1047 | 1047 | 4888 | 4888 |

Table 5 showed that there is a linear effect of cash transfers on mental health through the physical health mediator. The study also attempted to estimate the effect of cash transfers on the mental health of underprivileged households based on the number of disease symptoms that the individual has, namely the group without disease symptom and the group with disease symptom, to account for behavioral heterogeneity. The results in Table 6 showed that individuals without disease symptoms experienced a larger mental health improvement of 0.92 points after receiving cash transfers, compared to individuals with disease symptoms who experienced a smaller mental health improvement of 0.44 points. The study suggested that individuals with better physical health are less likely to experience psychological stress due to a disease, which could explain why better physical health predicts better mental health. Additionally, cash transfers may stimulate recipients to access health facilities, which has a positive impact on their physical health and subsequently their mental health as well.

***Validation Check***

The study found that there is a significant difference in the coefficient values between the equations with and without control variables in the second stage estimation in Table 2. This is due to the limited fulfillment of the exclusion restriction assumption on the instrumental variable for the household head's educational attainment. Mental health is a multidimensional issue, and various factors can affect an individual's mental health, including the instrumental variables used in this study. Although the study found that the household head's educational attainment does not directly affect an individual's mental health, the instrumental variable can influence other control variables, leading to overestimated coefficient values.

The text describes an investigation into the feasibility of using education attainment as an instrumental variable to understand the effect of cash transfers on mental health. The investigation involved looking at the effect of cash transfers on the mental health of underprivileged households, split into two groups based on the household head's education level: those with low education levels (0-7 years) and those with higher education levels (more than seven years). The results showed that the underprivileged households with low levels of education experienced a significant improvement in mental health (as measured by a 1.9-point increase in the CES-D mean score, or 8% of the mean score) after receiving cash transfers. In contrast, the underprivileged group with higher

education levels did not experience changes in mental health after receiving the cash transfer. This suggests that the household head's educational attainment can be used as an acceptable instrumental variable to explain the effect of cash transfers on the mental health of underprivileged individuals. Overall, the findings suggest that cash transfers can have a positive effect on the mental health of underprivileged individuals with lower education levels.

**Table 7**
**The effect of Unconditional Cash Transfers (UCT) on individual mental health based on education level of the head of the household (household head group with 0-7 years of schooling, and household head group with > 7 years of schooling)**

| Variables | Low education HH Head group (years of schooling: 0-7 years) | | Higher education HH Head group (years of schooling: > 7 years) | |
|---|---|---|---|---|
| | *First Stage* (*Dependent Variable:* Status of receiving UCT) | *Second Stage* (*Dependent Variable:* Skor CES-D) | *First Stage* (*Dependent Variable:* Status of receiving UCT) | *Second Stage* (*Dependent Variable:* Skor CES-D) |
| | (1) | (2) | (3) | (4) |
| HH receives UCT | | 1,991** | | 1,739 |
| | | (6,364) | | (1,694) |
| H Head's years of schooling | -0,010*** | | -0,021*** | |
| | (0,004) | | (0,003) | |
| Demographic factor | Yes | Yes | Yes | Yes |
| Household factor | Yes | Yes | Yes | Yes |
| Lifestyle factor | Yes | Yes | Yes | Yes |
| Residential location | Yes | Yes | Yes | Yes |
| F-statistic | 26,97 | | 55,48 | |
| Number of observations | 3064 | 3064 | 2871 | 2871 |

Again, the household head's educational attainment might be a weak instrumental variable. However, the use of OLS as an estimation technique was also not sufficient to investigate the relationship between cash transfers and individual mental health. As shown through Table 2 and column (1), OLS predicts a negative and insignificant effect of cash transfers on individual mental health. The issue of endogeneity in the OLS equation caused severe problems in measuring the relationship between the two. The estimation results obtained inclined to be biased and inconsistent. Thus, it can be concluded that the 2SLS model is more accurate in estimating the effect of cash transfers on mental health than the OLS model.

**Discussion**

In general, BLT and BLSM unconditional cash transfers played a role in supporting the improvement of individual mental health in the underprivileged households. Unconditional acceptance of cash transfers to underprivileged households had the potential to increase mental health scores by 1.5 points or 6.3% of the CES-D mean score. In other words, underprivileged households those are depressed and receive cash assistance of IDR 150,000 or equivalent to USD 16[2] will experience mental health improvement through increasing the CES-D score by 1.5 points. Based on the data in this study, the underprivileged and depressed population which previously amounted to 22.34 percent of the total underprivileged households, can be reduced by 7.06 percent, to 15.28 percent of the total poor households after receiving the cash assistance. These results are suggestive evidence that beneficiaries utilize BLT and BLSM cash transfers to meet their needs thereby reducing psychological stress or depression.

The enhancement of mental health scores after the provision of unconditional cash transfer is considered significantly improving the mental health of underprevilaged households and reducing economic pressure. This is supported by the analysis result which shows that beneficiaries have 36.9 percentage points probability of being more religious than non-beneficiaries. In other words, unconditional cash transfers stimulate individuals to be more religious than non-beneficiaries. The additional income earned from unconditional cash transfer can spare an individual's time previously used for work to perform worship activities or attend various religious activities. It stimulates individuals to become more religious so that they have better mental health. This study also found that unconditional cash transfers received by the underprivileged households reduced the likelihood of having symptoms, by 41 percentage points. It shows that unconditional cash transfers can improve individual physical health thereby supporting individual mental health.

The instrumental variables used in this study had met the assumptions of relevance condition, monotonicity, and technically did not have a significant direct relationship to mental health outcomes. However, exclusion restriction on instrumental variables cannot be fulfilled completely because the assumption itself is untestable and mental health issue is a multi-sectoral or multidimensional topic of discussion.

**Conclusion**

This empirical study found that unconditional cash transfers provided by the Indonesian government had a positive impact on the mental health of underprivileged households. The recipients of cash transfers had higher mental health scores than those who did not receive them. The study also identified two mediators that connect the transmission of the effect of cash transfers on individual mental health: individual religiosity and physical health, measured through the number of disease symptoms. The recipients of cash transfers were found to be more religious and had better physical health, which led to better mental health outcomes. However, the study has limitations, including its small sample size and limited scope.

The findings of this study have important implications, particularly in the context of the COVID-19 pandemic, which has led to economic pressures and increased risk of mental health problems among the underprivileged and vulnerable communities. The study suggests that cash transfers can help mitigate the decline in the welfare of underprivileged households during the economic crisis and reduce the increase in symptoms of depression. Moreover, the study highlights the need to integrate poverty alleviation programs with community religious activities and improve access to health facilities to promote better mental health.

Overall, this study provides valuable insights into the relationship between cash transfers and mental health in Indonesia and contributes to the discussion on the benefits and effects of government support for underprivileged households. Further research is needed to explore other possible mediation channels and different income levels.

## BIBLIOGRAPHY

Ali, G.-C., Ryan, G., & De Silva, M.J., 2016. Validated screening tools for common mental disorders in low and middle income countries: a systematic review. *PloS One*, 11(6).

Angeles, G., Hoop, J., Handa, S., Kilburn, K., Milazzo, A., Peterman, A. (2019). Government of Malawi's unconditional cash transfer improves youth mental health. *Social Science and Medicine*, 225, 108-119.

Badan Pusat Statistik. (2011). *Penghitungan dan Analisis Kemiskinan Makro Indonesia Tahun 2014*. Jakarta: Badan Pusat Statistik.

Baird, S., de Hoop, Jacobus, Ozler, B., Hoop, J De. (2013). Income shocks and adolescent mental health. *Journal of Human Resources*, 48 (2), 370–403.

Burns, J.K. (2015). Poverty, inequality, and political economy of mental health. *Epidemiology and Psychiatric Sciences*, 24 (2), 107-113.

Buser, T. (2015). The Effect of Income on Religiousness. American *Economic Journal: Applied Economics*, 7(3), 178-195.

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.

Dartanto, T., Rahmanto, F., Otsubo, S. (2019). Intragenerational Economic Mobility in Indonesia: A Transition from Poverty to Middle Class during 1993-2014. *Bulletin of Indonesian Economic Studies*, 56(2), 193-22.

Ellison, C., Boardman, J., Williams, D. R., & Jackson, J. S. (2001). Religious involvement, stress, and mental health: findings from the 1995 Detroit Area Study. *Social Forces*, 80(1), 215-249.

Eyal K, & Burns J. (2019). The parent trap: Cash transfers and the intergenerational transmission of depressive symptoms in South Africa. *World Development*, 117, 211-229.

Fernald, L., & Hidrobo, M. (2011). Effect of Ecuador's cash transfer program (Bono de Desarrollo Humano) on child development in infants and toddlers: a randomized effectiveness trial. *Social Science and Medicine*, 72(9), 1437–1446.

Gaarder, M., Glassman, A., & Todd J. E. (2010). Conditional cash transfers and health: unpacking the causal chain. *Journal of Development Effectiveness*, 2(1), 6–50.

Grossman, M. (1972). Concept of health capital and demand for health. *Journal of Political Economy*, 80 (2), 223–255.

Hossain, N., Brook, S., Garbarino, S., Notosusanto, S., Noor, I.R., & Seda, F. (2012). *Qualitative Assessment: The Social Impacts of Cash Transfer Programmes in Indonesia*. Jakarta: Tim Nasional Percepatan Penanggulangan Kemiskinan (TNP2K).

Khomaini, A.A. 2020. Dampak program bantuan tunai (cash transfer) terhadap kesejahteraan subjektif di Indonesia. *Indonesian Treasury Review: Jurnal Perbendaharaan, Keuangan Negara dan Kebijakan Publik*, 5(1), 1-16.

Lal. A, M. Lockhart, Xu Yiqing, & Ziwen Zu. (2021). How much we trust instrumental variable estimates in political science? Practical advice based on over 60 replicated studies. *Social Science Research Network Working Paper*, 1-144.

Lim, C., & Putnam, R. D. (2010). Religion, social networks, and life satisfaction. *American Sociological Review*, 75(6), 914-933.

Lousdal, Mette Lise. (2018). An introduction to instrumental variable assumptions, validation, and estimation. *Emerging Themes in Edpidemology*, 15(1), 1-7.

Lund, C., Breen, A., Flisher, A.J., Kakuma, R., Corrigall, J., Joska, J.A., Swartz, L., & Patel, V. (2010). Poverty and common mental disorders in low and middle income countries: a systematic review. *Social Science and Medicine*. 71(3), 517–528.

Lund C. (2012). Poverty and mental health: a review of practice and policies. *Neuropsychiatry*, 2(3), 213–219.

Ohrnberger, J., Anselmi, L., Fichera, E., Sutton, M. (2020). The effect of cash transfer on mental helath: Opening the black box—A study grom South Africa. *Social Science and Medicine*, 260, 113-181.

Paxson, C., & Schady, N. (2010). Does money matter? The effects of cash transfers on child health and development in rural Ecuador. *Economic Development and Cultural Change*, 59(1), 187–229.

Radloff, L. (1977). The CES-D scale: a selt report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.

World Bank. (2012). *Social assistance program and public expenditure review 2: BLT temporary unconditional cash transfer*. Jakarta, Indonesia: World Bank.

World Bank. (2013). World Development Indicators (WDI), the World Bank online database. Available at http://data.worldbank.org/indicator, diakses 19 Maret 2021.