



UNIVERSITI PUTRA MALAYSIA

***PSYCHOLOGICAL DISTRESS AS MEDIATOR IN RELATIONSHIP
BETWEEN FOOD INSECURITY AND ACADEMIC PERFORMANCE
AMONG UNDERGRADUATE STUDENTS IN PUBLIC UNIVERSITY IN
MALAYSIA***

NOR SYAZA SOFIAH BINTI AHMAD

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By

NOR SYAZA SOFIAH BINTI AHMAD

**Thesis Submitted to the School of Graduate Studies, Universiti Putra
Malaysia, in Fulfilment of the Requirements for the Degree of Master of
Science**

May 2022

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

PSYCHOLOGICAL DISTRESS AS MEDIATOR IN RELATIONSHIP BETWEEN FOOD INSECURITY AND ACADEMIC PERFORMANCE AMONG UNDERGRADUATE STUDENTS IN PUBLIC UNIVERSITY IN MALAYSIA

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May 2022

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Students were expected to perform well in their studies, however it is not easy. A hectic life and struggle to meet basic needs put them at risk of food insecurity and psychological distress. The alarming concern on high prevalence of food insecurity and psychological distress is a threat to students' success. Therefore, this study aimed to determine the mediating role of psychological distress in relationship between food insecurity and academic performance among undergraduate students in public university in Malaysia. By knowing the mechanism of these relationship, other researchers can help better understanding to plan intervention and improve students' quality of life.

In this cross-sectional study, a total of 663 undergraduate students in seven randomly selected faculties in Universiti Putra Malaysia were recruited. An online survey via Google form was conducted to obtain demographic and socioeconomic information, food security status, psychological distress and Cumulative Grade Point Average (CGPA). Chi-square test was used to determine the association between demographic and socioeconomics with food security status, Pearson correlation was used to determine the correlation between food security, psychological distress and academic performance meanwhile Binary Logistic Regression analysis were used to determine factors associated with food security status. PROCESS macro for SPSS was used for test the mediation.

Among the participating students, 32.4% are male with majority were Malay (68.5%), single (96.2%), not working part-time (94.9%), living inside campus (82.7%) and financial aid recipient (91.4%). About 62.8% reported to have experienced food insecurity. The prevalence of stress (34.5%), anxiety (77.3%)

and depression (40.1%) was reported among respondents. Majority of respondents (88.6%) had CGPA <3.75 while 11.4% had CGPA ≥3.75 for academic performance. There are associations between working parent, monthly household income, financial aid recipient, positive financial balance and perception on financial aid received ($p < 0.05$) with food security status. Meanwhile, food security status was significantly associated with psychological distress (stress, anxiety and depression) and academic performance ($p < 0.05$).

Binary logistic regression revealed that students with unemployed father (AOR = 1.875, 95% CI: 1.22, 3.074), from low income group (AOR = 2.021, 95% CI: 1.257, 3.250), financial aid recipient (AOR = 2.811, 95% CI: 1.602, 4.932) and those who have extra money (AOR = 8.024, 95% CI: 2.556, 25.195) were associated with food insecurity. Mediation analysis revealed that anxiety and depression as mediating variables in the relationship between food security status and academic performance ($p < 0.05$).

The high prevalence of food insecurity in this study suggests that it is the main concern currently faced by students. Students with unemployed father, low monthly household income, and financial aid recipient were the main predictors for food insecurity among students in this study. Results from mediation analysis showed that anxiety and depression mediated the relationship between food security status and academic performance. In other word, food insecurity increased anxiety and depression, in which this decreased the academic performance among university students. Overall, this study suggests that food insecurity has a negative impact on academic performance via anxiety and depression. Besides, these results demonstrate the importance of psychological health especially among those university students with food insecurity to improve their performance in academic.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master

**TEKANAN PSIKOLOGI SEBAGAI PENGANTARA DALAM HUBUNGAN
ANTARA KETAKJAMINAN MAKANAN DAN PRESTASI AKADEMIK
DALAM KALANGAN PELAJAR PRASISWAZAH DI UNIVERSITI AWAM DI
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Pelajar bertanggungjawab untuk memastikan prestasi akademik mereka berada di tahap yang cemerlang. Namun begitu, jadual yang padat dan kesukaran untuk memenuhi keperluan asas menyebabkan mereka menghadapi risiko ketakjaminan makanan dan tekanan psikologi. Menurut kajian literatur, ketakjaminan makanan dan tekanan psikologi melaporkan prevalens yang tinggi dalam kalangan pelajar, dan situasi ini menjadi ancaman kepada kejayaan pelajar. Oleh itu, kajian ini bertujuan untuk menentukan peranan pengantara (tekanan psikologi) dalam hubungan antara ketakjaminan makanan dan prestasi akademik dalam kalangan pelajar prasiswazah di Universiti Putra Malaysia (UPM). Pengetahuan mengenai mekanisme hubungan ini dapat membantu penyelidik lain memahami dengan lebih baik untuk merancang intervensi dan meningkatkan kualiti hidup pelajar.

Dalam kajian keratan rentas ini, seramai 663 pelajar prasiswazah di tujuh buah fakulti di UPM yang dipilih secara rawak telah mengambil bahagian. Kajian dalam talian menggunakan borang *Google* telah dijalankan untuk mendapatkan maklumat berkaitan latar belakang demografi dan sosioekonomi, status sekuriti makanan tekanan psikologi (tekanan, kebimbangan dan kemurungan) dan Purata Nilai Gred Kumulatif (PNGK) untuk prestasi akademik. Ujian *Chi-square* digunakan untuk menentukan hubungkait antara demografi dan sosioekonomi dengan status sekuriti makanan, kolerasi Pearson untuk menentukan kolerasi antara pembolehubah status sekuriti makanan, tekanan psikologi dan prestasi akademik manakala Binari Logistik Regresi digunakan untuk menentukan faktor-faktor perkaitan dengan sekuriti makanan. *PROCESS* makro untuk SPSS digunakan untuk menguji pengantara.

Dalam kalangan pelajar yang terlibat, 32.4% adalah lelaki dan majoriti adalah Melayu (68.5%), bujang (96.2%), tidak bekerja (94.9%), tinggal dalam kampus (82.7%) dan penerima bantuan kewangan (91.4%). Kira-kira 62.8% pelajar mengalami ketakjamanan makanan. Prevalens bagi tekanan (34.5%), kegelisahan (77.3%) dan kemurungan (40.1%) dalam kalangan responden. Majoriti responden (88.6%) mendapat CGPA ≥ 3.75 untuk prestasi akademik. Terdapat hubungkait antara ibu bapa yang bekerja, pendapatan bulanan isirumah, penerima bantuan kewangan, baki kewangan yang positif dan persepsi terhadap bantuan kewangan yang diterima dengan status sekuriti makanan ($p < 0.05$). Tambahan lagi, status sekuriti makanan berhubungkait secara signifikan dengan faktor-faktor psikologi (tekanan, kegelisahan dan kemurungan) dan prestasi akademik ($p < 0.05$).

Binari Logistik Regresi mendedahkan pelajar yang bapanya tidak bekerja (AOR = 1.875, 95% CI: 1.22, 3.074) daripada golongan yang berpendapatan rendah (AOR = 2.021, 95% CI: 1.257, 3.250) penerima bantuan kewangan (AOR = 2.811, 95% CI: 1.602, 4.932) dan pelajar yang mempunyai lebih wang (AOR = 8.024, 95% CI: 2.556, 25.195) adalah berkait dengan status sekuriti makanan. Tambahan lagi, ujian kolerasi Pearson menunjukkan semua pemboleh ubah berkolerasi antara satu sama lain ($p < 0.05$) kecuali tekanan ($p > 0.05$). Analisa pengantara mendedahkan kebimbangan dan kemurungan sebagai pemboleh ubah pengantara dalam hubungkait antara status sekuriti makanan dan prestasi akademik ($p < 0.05$).

Kesimpulannya, prevalens ketakjamanan makanan yang tinggi dalam kajian ini menunjukkan bahawa ia adalah kerisauan utama yang dihadapi oleh pelajar. Pelajar yang bapanya tidak bekerja, mempunyai pendapatan isi rumah yang rendah dan penerima bantuan kewangan adalah faktor-faktor kepada ketakjamanan makanan yang dialami oleh pelajar. Hasil dari analisis pengantara menunjukkan bahawa kegelisahan dan kemurungan menjadi pengantara dalam hubungan ketakjamanan makanan dan prestasi akademik. Dengan kata lain, pelajar yang mengalami ketakjamanan makanan akan meningkatkan masalah kebimbangan dan kemurungan, sekaligus menyebabkan penurunan dalam prestasi akademik. Secara keseluruhannya, kajian ini menunjukkan bahawa ketakjamanan makanan memberi kesan yang negatif terhadap prestasi akademik akibat daripada kebimbangan dan kemurungan. Selain itu, dapatan kajian ini menunjukkan kepentingan kesihatan psikologi terutamanya dalam kalangan pelajar yang mengalami masalah ketakjamanan makanan untuk meningkatkan prestasi mereka dalam akademik.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree Master of Science. The members of the Supervisory Committee were as follows:

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This is to confirm that:

- the research and the writing of this thesis were done under our supervision;
- supervisory responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2015-2016) are adhered to.

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LIST OF ABBREVIATIONS

AOR	Adjusted Odds Ratio
CDC	Centers for Disease Prevention and Control
CGPA	Cumulative Grade Point Average
CI	Confident Interval
DASS	Depression Anxiety Stress Scale
EPU	Economic Plan Unit
FAO	Food and Agriculture Organization
GPA	Grade Point Average
HFSSM	Household Food Security Status Model
JPA	Jabatan Perkhidmatan Awam
MARA	Majlis Amanah Raya
OR	Odds Ratio
PTPTN	Perbadanan Tabung Pendidikan Tinggi Negara
SAD	Stress Anxiety Depression
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPM	Universiti Putra Malaysia
USDA	United State Department of Agriculture
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

In this chapter, the background of the study, its problem statement, significance of the study, research questions, research objectives, null hypotheses and research framework of the study are presented.

1.1 Background

There is no end to education. Being educated give huge advantages to humankind therefore if given the opportunity; everyone wants to pursue their study to higher education. Education is a great agent of change which enhance health and stability in social life. Those received higher education are more likely to get economic and social opportunities (Sothan, 2019). Over the decades, the numbers of students entered university increase tremendously regardless of age (UNESCO Institute of Statistics, 2014). The high demand for higher education continues to grow as public and private universities compete to attract students. University students aware of important to acquire knowledge and build skills needed in order to excel in particular chosen future career. Besides that, possess higher education improved productivity and provide better standard of living (Sothan, 2019). Nevertheless, acquiring knowledge and skill is a tough journey and required time. Students need a long rough path through gaining knowledge and skill and expected to graduate with excellent academic performance (Tadese et al., 2022).

Academic performance is the degree to which a student has accomplished their educational objective and was assessed through either by constant evaluation or cumulative grade point average (CGPA) (Talib & Sansgiry, 2012). Previous study reported among Indonesian high schoolers which students who had good grade have more earning, get well services as worker and opportunities (Tentama & Abdillah, 2019). In addition, having better academic achievement boost confidence and self-esteem, low in psychological distress and have been motivated socially (Regier, 2012). Despite that, a local study among university students reported that an increasing number of students failed to complete their study on time due to not doing well academically (Ab Razak et al., 2019).

One of the barriers to poor academic performance is insufficient money to need basic need while studying. Students become hunger or food insecure; where they unable to get quality food for life. Food insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain (Food and Agriculture Organization, 2009). Common vulnerable population that associated with food insecurity usually are mother, children and aging population, however, recently, the worry on food insecurity among students have become visibly (Van

den Berg & Raubenheimer, 2015). The need to identify the students at risk and help eradicate the food insecurity problem among university students is prioritize.

Lack of access to safe, adequate and nutritious food may put a student in psychological distress and interrupt the learning process (World Health Organization, 2020). Psychological distress refers to emotional discomfort and overwhelming feeling experienced by individual as a body response to the disturbance stimuli that need to take be coping with (Arvidsdotter et al., 2016). Stress, anxiety and depression are commonly identified as psychological distress. The stressful transition from adolescent to adulthood, triggers psychological distress in students. The way student's response to the stressor determine their happy life in campus. On the other hand, inability to cope with psychological stress can harm students especially may interrupt the learning process in class thus effect their academic score (Sharma & Pandey, 2017; Oketch-oboith & Okunya, 2018).

1.2 Problem Statement

In the past decade, the high prevalence of food insecurity gaining attention as public health issue. Food insecurity becoming threat to students' health and success. The financial difficulties are the foremost predictor that food insecurity exists among university students (Davidson & Morell, 2018; Bruening et al., 2018; Sulaiman et al., 2020). Insufficient financial aid, high living expenses, poor financial management and overprice nutritious and balance food lead to student's encountered food insecurity (Sulaiman et al, 2021; Dominguez-whitehead, 2017). The transition life event from structured school to less structured university seem to put food insecurity students facing additional challenges and worsen psychological distress thus may disrupt students' duty to perform well in study (Reeder et al., 2020; Raskind et al., 2019; Martinez et al., 2018).

Globally, the prevalence of food insecurity among university students in the United State was in the range of 14% to 59% (Hughes et al., 2011; Gaines et al., 2014; Patton-Lopez et al., 2014; Maroto et al., 2015; Twill et al., 2016; Goldrick-Rab et al., 2017). Previous abroad and local studies have reported the prevalence of food insecurity among university students. The recent systematic review recorded that the average food insecurity among college and university students in the United State was 33% (Brueinig et al., 2017). Similar situation happened in Malaysia, the prevalence of food insecurity among university students reported by local researcher is quite alarming where the lowest prevalence of food insecurity among students in Malaysia reported by Ramlee et al. (2019) was 22% while the highest percentage of food insecurity stated by Rajikin et al. (2019) was 69.4% (Sulaiman et al., 2021). According to Sulaiman et al., (2021) the geographical location (urban and rural) as well as sample size of the study are the possible reasons for the variation in the prevalence of food insecurity in Malaysia. Students from rural area may have difficulties to get

access to variety of food and prices of food in urban area may be high for them to purchased (Sulaiman et al., 2021).

Regardless of high percentage of food insecurity that exists among university students, a small number of researchers identified how food insecurity negatively impact students' outcomes, counting psychosocial and academic performance throughout their university life (Bruening et al., 2016; Patton-Lopez et al., 2014; Payne-Sturges et al., 2018; Martinez et al., 2018; Raskind et al., 2019). Evidence suggested that food insecure group was more likely showed low academic performance among students attending university and colleges (Silva et al., 2015; Morris et al., 2016; Maroto, 2014). In addition, food insecurity students reported had higher odds of stress and depression level compared to food security students (Wattick, Hagedorn & Olfert, 2018; Pryor et al., 2016; McLaughlin et al., 2012; Weaver et al., 2009; Bruening et al., 2016). The collective evidences from previous studies suggested that food insecurity can interfere negatively in psychosocial and hinder the success of the students. Hence, unable produce progressive future nation.

Moreover, the relationship between psychological distress and academic performance needs to be taken into consideration because previous researcher stated that depression as a predictor to poor GPA among university students (Sharma & Pandey, 2017). The evidence provided by previous study strengthen the body knowledge on negative impact of low level of psychological distress associated with poor student's academic performance (Awadalla et al., 2020; 2018; Sharma & Pandey, 2017). Psychological factors such as stress, anxiety and depression play very crucial impact on academic performance among students. The psychosocial disturbance interferes with people happiness in life. The individual may not realize it, but they experienced this problem without they notice.

Excellent academic performance helps students with job opportunities, stability, and helps the future nation. Food insecurity is often associated with higher odds of psychological distress (stress, anxiety, and depression) as well as hindering academic performance. It is important to identify the potential pathway to help in promoting quality of life for students. Early intervention on tackling a food insecurity issue can help reduce the emotional distress encountered by a student, thus improving performance academically. On the other hand, reducing stress, anxiety, and depression can also promote better achievement. Therefore, understanding the potential mediating variables can provide a better insight into the underlying pathway on the relationship between food security status and academic performance for better future intervention planning.

The present study seeks to address this gap by considering mechanisms that can potentially mediate the relationship between food security status and academic performance among university students in Malaysia. The interrelation between food security status, psychological distress, and academic performance

need to be further understanding. Exploring this relationship can help future researchers have a better insight on the underlying mechanism. To date, there has not been a study conducted in Malaysia that tested the psychological distress as mediator on the relationship between food insecurity and academic performance among university students. Therefore, this study attempts to determine the potential mediators in the relationship between food security status and academic performance through psychological distress (stress, anxiety, and depression) among university students.

1.3 Research questions

Several research questions were developed, as in the following:

1. Are there any associations between demographic and socioeconomic characteristics and food security status among undergraduate students in public university in Malaysia?
2. Are there any correlations between food security status, psychological distress and academic performance among undergraduate students in public university in Malaysia?
3. Does psychological distress mediate the relationship between food insecurity and academic performance?

1.4 Research objectives

1.4.1 General objective

To determine the psychological distress as mediator in relationship between food insecurity and academic performance among undergraduate students in public university in Malaysia.

1.4.2 Specific objectives

1. To assess the demographic and socioeconomic characteristics, food security status, psychological distress and academic performance of the undergraduate students in public university in Malaysia.
2. To determine the associations between demographic and socioeconomic characteristics and food security status among undergraduate students in public university in Malaysia.
3. To determine the correlations between food security status, psychological distress and academic performance among undergraduate students in public university in Malaysia.
4. To determine the psychological distress as mediator in the relationship between food insecurity and academic performance among undergraduate students in public university in Malaysia.

1.5 Research hypotheses

- H₁: There are associations between demographic and socioeconomic characteristics and food security status among undergraduate students in public university in Malaysia.
- H₂: There are correlations between food security status, psychological distress and academic performance among undergraduate students in public university in Malaysia.
- H₃: Psychological distress mediates the relationship between food security status and academic performance.

1.6 Significance of the study

This study is important because to date, the issue on high prevalence of food insecurity among university students growing public health concern. Findings from this study are important to add the body of knowledge to the current status of food insecurity among university students in UPM. Besides that, this study provide evidence to the government, non-government and higher institution to think about new strategies to help students get basic need to continue to live. For example, the decrease in tuition fees and increase in students' loan/scholarship may help students' financially. Moreover, food bank or food assistance at targeted students in needs may greatly help the students to survive. In addition, this study examines about the consequences for food insecurity students faced. If relationship found to be significant, this study will add to the body of knowledge and give insight the importance to improve food insecurity to enhance mental health and academic success rate for the students.

Identifying mediating variables may help tackling issue on relationship between food security status and academic performance and elucidate pathway by which students can increase mental health. If the significant relationship exists, this study may able to offer great insight that will help higher institutions. Again, Student Affairs Division play role to identify students at risk for food insecurity, therefore provide opportunities for early interventions. Subsequently, future researchers also can implement interventions designed to promote good mental health among students besides focusing on eradicate food insecurity in order to improve academic performance. Through this study, it will also deepen our understanding on the implementing program more effectively and comprehensive on combating food insecurity and better academic performance through reducing or managing students' mental health.

1.7 Research framework

Figure 1.1 shows the research framework of this study. Research framework of this study consist of antecedent variable (variable comes before independent

and dependent variable), independent variable, mediator variable and dependent variable. The first part of the research framework is the contributing factors related to independent variable. This study wants to identify demographic and socioeconomic characteristics (antecedent variables) are the factors related to food security status (independent variable). After that, mediation model was developed from the step-by-step following the criteria for mediation by Baron and Kenny (Hayes, 2013; Oyugi, 2015). First the relationship between food security (independent variable) status and academic performance (dependent variable), second the relationship between food security status (independent variable) and psychosocial factors (mediator variable) and third is the relationship between psychosocial factors (mediator variable) and academic performance (dependent variable).

1.8 Definitions

1.8.1 Food security status

Conceptual definition: When all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy lifestyle (FAO, 2009).

Operational definition: Food security status is measured at individual level and based on components of food insecurity namely quantity, quality, psychological and social acceptability. Food security status categorized into high, marginal, low and very low food security based on US Adult Food Security Survey Module (US-FSSM) (USDA, 2012).

1.8.2 Physiological distress

Conceptual definition: Psychological distress refers to discomforting and overwhelming feeling experienced by individual in response to daily stressors or demands that difficult to cope with (Arvidsdotter et al., 2016).

Operational definition: Psychological distress consists of stress, anxiety and depression and it is measured by DASS-21 (Lovibond & Lovibond, 1995).

1.8.3 Academic performance

Conceptual definition: Academic performance (achievement) refers to the outcome of education. It is very common indicator to measure achievement in education (Talib & Sansgiry, 2012).

Operational definition: The results obtained by a student at the end of specific terms commonly in cumulative grade point average (GCPA) (Adibah et al., 2019).



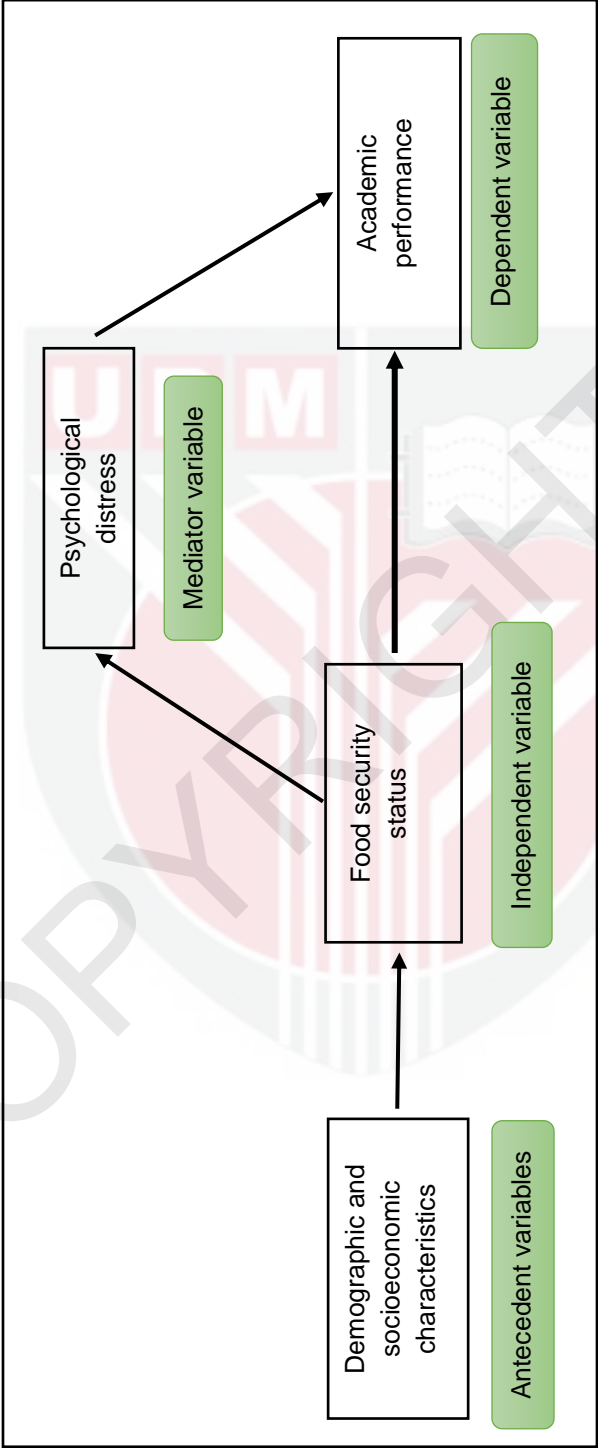


Figure 1.1: Research framework

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