Honors Program

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School Age Children: The Effects of Hunger

Nursing

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Abstract

The proposed study examined prevalence of school age children who lacked necessities in School District 31. The purpose was to identify how providing necessities such as food can impact learning and behavioral issues. The goal was to determine how lack of nutrition affects children's learning and behaviors. The school district currently has a homeless liaison and a backpack program to address issues like nutrition and attendance in school. The backpack program is a program initiated by the homeless liaison at the school district and funded by the United Way. Children who participate are provided a backpack on Friday afternoons with enough food for them (just the child) for 4 meals over the weekend. This study consisted of conducting a literature review, interviewing the school district homeless liaison, assessing data on the children who are in the backpack program without having direct contact with the children, and interviews with teachers, and administrators. The study had three guiding questions 1). Do children that are participating in the Backpack Buddies program have improved grades in school after starting the program than before they were on the program? 2) Since the start of the Backpack Buddies program has there been an improved school attendance? And, 3) How do teachers describe the impact of the Backpack Buddies program and the outcomes of the program? The data collection, analysis, and plan for action were guided by Betty Neuman's Systems Theory theoretical model.

Introduction

In 2009, there were approximately 960,000 children who were registered as homeless in the public school systems (Lord, 2009). There are many situations where a homeless person cannot be identified from one who has a steady life. Children learn to adapt to their lifestyles mostly from naivety. In a classroom with children who are homeless or come from challenging home environments, the children may look like children in any other classroom at the school (Parke & Agness, 2002). These children all have no guarantees of food, safety, or shelter when they leave the preschool. Homeless children may blend into the school setting.

Despite their accommodations, most homeless children suffer specific physical, psychological, cognitive, and emotional damage due to the circumstances that accompany episodes of homelessness (Hart-Shegos, 1999). With all the right necessities, including nutrition, support, and shelter, they are able to grow, develop, and mature into healthy adults with an education and means to create a living. If a child lacks these necessities, they do not have the right resources to grow, develop, and mature into healthy educated adults. The research is going to look at whether or not student outcomes in school have improved since the start of the backpack program. Questions guiding this study include: 1). Do children that are participating in the backpack program have improved grades in school after starting the program than before they were on the program? 2) Since the start of the program has there been an improved school attendance? And, 3) How do teachers describe the impact of the backpack program and the outcomes of the program? The data collection, analysis, and plan for action were guided by Betty Neuman's Systems Theory theoretical model.

Homelessness

"On any given night in America, anywhere from 700,000 to 2 million people are homeless" (Homelessness, 2004). Homeless means any individual who lacks a fixed, regular, and adequate nighttime residence. "Families make up 40 percent of the country's homeless population" (Bassuk & Friedman, 2005). There will be approximately 200,000 American children who will not be able to find shelter to sleep in tonight (Bassuk & Friedman, 2005).

The nation saw that homeless children had a harder time attending school and, therefore; enacted the No Child Left Behind law. This law allows students to enroll without proof of residency or other paperwork (Holgersson-Shorter, 2010). Federal law also mandates that states have homeless liaisons in each district to help support families in need and provide social and educational services (Holgersson-Shorter, 2010). Teachers and schools are the most common resources available to homeless children and most often they are under prepared to deal with these issues.

In 2009, there were approximately 960,000 children who were registered as homeless in the public school systems (Lord, 2009). In school district 31 in Bemidji, Minnesota, there is an average between 200 and 400 students who are considered homeless every day. Homeless students lack a fixed, regular, and adequate nighttime residence. Homelessness includes children who share housing of other persons due to loss of housing, economic hardship, living in motels, hotels, trailer parks, camping grounds, emergency shelters, abandoned buildings, cars, buses, parks, train stations, or are awaiting foster care placement. Included in the homeless definition are children who have a primary nighttime residence that is public or private but is not designed for regular sleeping accommodation for human beings. Other children who are included are defined as migratory who are only here for temporary placement (The families' guide support services for students who are homeless or in housing transition due to economic strain, 2010).

Health

Homeless children are affected in many different ways from being homeless. Most homeless children suffer specific physical, psychological, cognitive, and emotional damage due to the circumstances that accompany episodes of homelessness (Hart-Shegos, 1999). Homeless children are at greater risk for poor health, infectious diseases, and mental disorders than other children (Hart-Shegos, 1999). Homeless children have a greater tendency to score poorly on math, reading, spelling, and vocabulary tests, and are more likely to be held back a year in school (Hart-Shegos, 1999). There are many ways to reverse or slow down the severe effects of homelessness on children such as providing supportive housing, drug and alcohol treatment, parenting support, afterschool programs, and nutritional support (Hart-Shegos, 1999).

Plan

The theoretical model of Betty Neuman's Systems Theory will be used to guide this study (Neuman & Fawcett, 2002). The nursing process will also help guide the steps that need to be taken. The first step is to identify relevant existing data through a literature review. After identifying the concern, guiding questions, and obtaining Human Subjects approval interviews will be conducted and public health data collected. The next step is to assess this data. School age children who are homeless and attend the Bemidji area schools will be assessed as well. The necessities that are essential for their education, for example nutrition, will be the main goal. The next step is to make a plan in how or what kinds of interventions are needed and how the community can intervene to assist with these needs. The planning stage will consist of a nursing diagnosis and intervention recommendations. The next step will be to implement the interventions from the nursing diagnosis and the last step is to evaluate the outcomes.

Literature Review

Poverty

The Census Bureau claims that for a household in 2011 consisting of one person they need $10,890 (Census Bureau, 2011). A family consisting of two parents and three children are considered in poverty if the family makes less than $26,170 (Census Bureau, 2011). In 2009, poverty hit an all time high in 15 years of a rate of 14.3% of people in the United States considered in poverty according to the guidelines by the Census Bureau (Census Bureau, 2011). In other words, 44 million people were considered in poverty in year 2009, or 1 in 7 citizens. This number is only increasing year after year as the economy is collapsing.

"Poverty in children has long been recognized as a determinant of a wide range of negative socioeconomic outcomes from lower educational achievement and behavioral problems to lower earnings in the labor market" (Lord, 2009). Children at greatest risk for poverty are children who are immigrants with two immigrant parents or children who are native born with at least one immigrant parent (Lord, 2009). Other high risk groups are children apart of single parent families, especially if they have a single mom (Walker, Crawford, & Taylor, 2008). Poverty and the vulnerability of single parent families and the consequences of poverty have been linked to the concept of social exclusion resulting in behavior that does not conform to societal norms (Walker, Crawford, & Taylor, 2008). Other families affected by poverty are families with handicapped children or parents (Walker, Crawford, & Taylor, 2008). Children who live in poverty have greater risks of dropping out of school, participating in criminal activities, overall have poorer health, and they tend to leave home early to work low skill, low paying jobs (Walker, Crawford, & Taylor, 2008). Poverty has been linked to aggressive and delinquent behavior along with increased alcohol and substance abuse. (Najman, Clavarino, McGee, Bor, Williams, & Hayatbakhsh, 2010).

The rising costs of food make it much harder for families below the poverty level to buy healthy sustaining food for themselves and children (Walker, Crawford, & Taylor, 2008). The costs associated with healthy eating can limit the capacity to be healthy in that most parents are forced to buy cheaper, less healthy food for their children. These children are also not the ones participating in sports after school for regular exercise and play (Walker, Crawford, & Taylor, 2008).

Nutrition

Nutrition and diet directly effects the child's growth and brain development. The brain grows the most rapidly in the last third of pregnancy and the first 2 years of life, it will achieve its adult weight by the age 14 (Benton, 2008). The brain is a very metabolically active organ accounting for a high percentage of total metabolic rate which, therefore, needs energy in order for it to grow. A kindergarten child has twice the metabolic rate of an adult because of the growth of the brain. The high metabolic rate of the brain means children need a constant supply of glucose to those cells and tissues.

Starvation results from inadequate intake of macronutrients (proteins, fats, and carbohydrates), this is different from human starvation and semi-starvation which result from deprivation of food, not specific nutrients, so both micronutrient and macronutrient deficiencies result, causing clinical disease (Birmingham, 2000). A study that took 40 men that had been screened for exceptional physical and psychological health and who had volunteered to be a part of the 24 weeks of semi-starvation. Of these 40 men, 4 dropped out because they could not tolerate semi-starvation, 3 developed binge-eating, 2 began to steal food, 1 suffered from severe depression, and 2 were admitted to hospitals because of symptoms of psychosis. This study was a longitudinal study and followed up with these men 50 years after the 24 week starvation and

found abnormal eating behaviors and that ruminations persisted in all of the volunteers who consented to interview. Overall, this study concluded that the effects of hunger are powerful and long-lasting (Birmingham, 2000).

Malnourished children show attention deficit disorders along with aggressive behaviors more than children who are not malnourished (Benton, 2008). Further correlations between malnourished children growing up and becoming obese, developing heart disease, hypertension, and diabetes have been identified by Benton (2008). Type of nutrition is also very important. The use of micronutrients and zinc in children's diet has improved attendance, increased school performance, improved gross motor skills, and increased short term memory (Taras, 2005). The brain also needs protein and glucose in order to grow and function properly. The brain is mostly made of n-3 fatty acid DHA and the n-6 fatty acid arachidonic acid (Benton, 2008). These fatty acids are found in high concentrations in breast milk.

The type of food eaten is also important to a child's diet. Eating too much nonnutritive food and having too little physical activity decreases attention spans, increases bad behavior, and increases absence from school due to illness (Wiles, Northstone, Emmett, & Lewis, 2009). Diets high in "junk food" are known to cause hyperactivity along with multiple other health problems (Winicki & Jemison, 2003). Those who did not get micronutrient treatment were absent more from diarrhea and respiratory problems, along with having decreased short term memory (Taras, 2005). Nutrition improves mood and behavior (Soh, Walter, Baur, & Collins, 2009). Those who are under nourished or eat too much nonnutritive food have a tendency to experience more depression that those who are well nourished with appropriate nutrients (Soh, Walter, Baur, & Collins, 2009).

It is extremely important for children to eat breakfast so that they can continually get the glucose they need for brain metabolism. Children age 9 have enhanced cognitive performance within one hour after eating breakfast where those who have fasted do not (Benton, 2008). There is a difference in eating confectioner sugar cereal and whole grain cereal. Children who eat complex carbohydrates have longer lasting effects than those who eat simple carbohydrates, but children who get a constant supply of protein have by far the longest lasting effects on attention, growth, and behavior (Benton, 2008). Snacking is another important aspect of eating during school. Children who are allowed snack time during school have shown improved cognitive function along with enhanced attention (Benton, 2008).

Millions of American children are going to school hungry, and hunger is linked to lower test scores, behavioral problems, tardiness, and absenteeism. Many children symptoms such as headaches and stomachaches are linked to hunger and so children are spending valuable learning time distracted by pain or visiting nurse's office instead of learning in class. The most heavily used nutrition program is the National School Lunch Program which serves more than 26 million meals a day, in 95% of the nation's public schools (When kids show up hungry, 2000).

Nearly 42% of children in households report food insecurity (Winicki & Jemison, 2003). Each household was examined using the 18-item food security supplement tool to determine the food status at the child's household. Using the information from the food security tool and information from the school about height, weight, BMI, math scores they were able to compare and contrast the data to see if children who are malnourished have a correlation with their size and test scores (Winicki & Jemison, 2003). Children who were deemed food insecure had lower math scores at the start of the kindergarten year than those who were deemed food secure. Kindergarteners who were food insecure did not improve on their math scores as much as

kindergarteners who were food secure (Winicki & Jemison, 2003). BMI was found to be larger in food insecure children do to the fact that poorer children tend to have more access to high-fat, high-calorie convenience foods, soda consumption, and diminished activities (Winicki & Jemison, 2003).

School Programs

Families with young children comprise 41% of the nation's homeless population and are the fastest growing homeless population (Holgersson-Shorter, 2010). If a homeless child goes to school, they can be distracted by hunger, shabby clothing, lack of school supplies, or anxiety about their family's security, not to mention the peer pressure they feel because they aren't exactly like children with homes (Holgersson-Shorter, 2010). Children who are homeless for a year are subject to developmental delays at four times the rate of their peers, are twice as likely to repeat a grade, and are identified with learning disabilities twice as often (Holgersson-Shorter, 2010). The school breakfast program was implemented in many schools and this helps homeless and or hungry children attend school because they have to go to school to get breakfast which means they will have nutrition to function off of as well as not being tardy to class because they are already at school. The school food programs have shown increased attendance, higher grade point averages, and overall better cognition (Grantham-McGregor & Olney). The breakfast program has been shown to create better attention in classroom students.

The program that Bemidji has recently implemented at one area school is called Backpack Buddies. This program was implemented fall of 2010. Every Friday afternoon or any day before large breaks from school the children are released from class early to go and receive a backpack filled with 2 entrees, 1 snack, 2 breakfast items, 1 vegetable, 2 fruits, and 2 milks, and 1 high protein (Bowen, 2011). The pre-packaged bags are purchased at around $3.18 each

through North Country Food Bank (Bowen, 2011). The idea is that some children do not eat food over the weekend or do not get enough to eat. The backpack provides food and security for children in need. Children are referred by teachers and parents give the final consent for the children to have access to the backpacks. When talking with the school district liaison she was initially very worried that this program would not be appreciated by the students subjecting them to peer teasing, and social rejection. Last year, 2010, was the first year this program was implemented in School District 31. There were only 125 backpacks that could be given out per week. They had to turn applicants away for all of their slots are filled. This year through fundraising and grants they now have 275 backpacks to give away per week to children in need. Unfortunately this still doesn't cover all the children in need.

Questions

The research focused on whether or not student outcomes in school have improved since the start of the backpack program.

1. Do children that are participating in the Backpack Buddies program have improved grades in school after starting the program than before they were on the program?
2. Since the start of the Backpack Buddies program has there been an improved school attendance?
3. How do teachers describe the impact of the Backpack Buddies program and the outcomes of the program?

Methods

This study included a secondary analysis of attendance and grades; and survey research was conducted with teachers who have students in the backpack program. There was very little

original data collected during this process with the exception of interviews. The steps in this research included:

1. Obtain Human Subjects approval from BSU including a letter of support from the school district. See abstract A and abstract B.
2. Review literature to identify similarities and inconsistencies between the literature and this study.
3. Request data on children in the backpack program, before and after the start of the backpack program identify attendance/absent rates and grades. The homeless liaison will randomly select participants and provide the data without identifying names or other characteristics. See abstract E, abstract F, and abstract G.
4. Distribute survey to school teachers and administrators at school. The goal is to obtain a 50-70% completion (n= 49). See abstract C and abstract D.

Data Analysis

Both descriptive and correlational analysis was conducted on the survey and the secondary analysis. A *t*-test was conducted of the attendance data. The other data was organized by grade and the means were conducted to see correlations. Qualitative analysis of the "fill in the blank" questions and qualitative descriptive analysis was completed on all qualitative questions. The guiding theory for this research is Neuman's Systems Model. This model reflects the impact of stressors on the decisions, actions, and health of individuals (Neuman & Fawcett, 2002). As analysis occurs consideration for stressors in the home and classroom environments as well as how nutrition and hunger impact behavior will be central.

Data analysis included reviewing the theoretical model and clustering data into the categories identified by Betty Neuman's Systems Theory Model. During data analysis, key

stakeholders (Homeless coordinator, school administrator, parents) were asked if the data appears accurate.

The Betty Neumans's System Model is a unique theory in that it takes wide range of international health concerns and brings one manageable focus point to the problem. This theory is open to create interpretation and it is also able to mold into futuristic ideas. It is widely used throughout the world as a multidisciplinary, holistic, and comprehensive guide for excellence in nursing practice, education, research, and administration (Neuman's System Model, 2011).

Systems Model

The Betty Neuman Systems Model starts with a system as defined by what is included within the boundary of the study. Whether it be an individual, family, group, community or social issue it must have relevance to a particular health care discipline and represent the reality of its domain of concern (Neuman & Fawcett, 2002). The system is the basic structure of the proposed study including variables such as physiological, psychological, and sociocultural, developmental, and spiritual.

In this study, the community public school is a part of the system along with teachers, administrators, family, and school children. Other factors of the study look at psychological aspects which refer to mental processes of the children to see whether or not they are able to maintain appropriate grades and an education. The study also looked at sociocultural aspects which refer to combined effects of social cultural conditions, and influences to see what other factors could be affecting the child's grades and attendance. The study also looked at the developmental side of the child by asking the teachers and administrators what concerning behaviors are a part of the classroom.

Stressors

A stressor within the Betty Neuman Systems Model is where a tendency exists within any system to maintain a steady state or balance among the various disruptive forces operating within or upon it (Neuman & Fawcett, 2002). Stressors can have positive or negative effects on the proposed outcomes which largely depend on the system's ability to accommodate and or react to the stressor (Neuman & Fawcett, 2002). Stressors can be intrapersonal, interpersonal, or extrapersonal in nature (Neuman & Fawcett, 2002).

A major intrapersonal stressor in the study included the student's ability to respond to the lack of necessities and their ability to accommodate. Some students may have conditioned responses or autoimmune responses. Some interpersonal stressors include the environment the student attends after school. This includes the home environment and where their lack of necessities may play a role in the student's behavior, grades, and attendance. The extrapersonal stressors include the financial state of the caregivers and providers of the students. It also includes their mental state and ability to acquire capital funds.

Expected Results and Outcomes

It was expected that children who took advantage of school food programs would perform better than they did before they were a part of the Backpack Program. There was a new program that had been implemented at JW Smith called the "Backpack Buddies Program" which distributes food enough for two meals and two snacks on Friday afternoons to students who were eligible and whose parents have given their consent to allow their child to accept food. This program was started because many children were suspected of not having any food to eat over the weekend. Studying of the program may promote further funding of the program.

Teachers would be able to give me a better understanding of behaviors among children who are homeless and children who are not. It will be interesting to identify if the teachers have

noted a change in behavior and Friday attendance since the "Backpack Program" has been implemented.

Timeline

September 2011- Thesis Proposal Complete and school district approval accepted. Human Subjects Forms approved and thesis proposal accepted.

October 2011- Start of field work once everything was accepted.

November 2011- Review of data collection.

January 2012- Submission of results, discussion, limitations, and conclusion.

March 2012- Evaluation of information, final report preparation, and submission.

April 2012- Information and Thesis made available to the public along with participants of the study.

Personnel

This project required the assistance of the homeless liaison of the school district. She was able to provide access to the information necessary for this thesis along with being a good resource of information. She was able to point me in the right direction and get me connected with schools and food aid programs because she deals with this each and every day.

Results

Demographics

The survey that was given includes demographic data about the teacher and the classroom. There were four total surveys returned for the data process (N=4). The years of experience of the teachers ranged from two years up to nine years. The teachers currently teach kindergarten, first grade, and fourth grade. The numbers of students in each of these classrooms ranged from 21-27 students, between two and five of these students per class participate in the

Backpack Buddies program. Teachers estimated two to six children come to class hungry on a daily basis. Table 1 Demographic Information of the Classroom summarizes this information.

Table 1 Demographic Information of the Classroom

Question	Range	Average
How many years have you been teaching?	2-9	4.75
How many students are in your room?	21-27	24
How many participate in the Backpack Program?	2-5	3.75
How many students present on a daily basis as hungry?	2-6	4

Hunger

The second part of the survey looked at ways the teachers had identified hunger in the classroom and more importantly how they could address hunger issues. Table 2 shows the signs and symptoms of hunger and options to address these issues as stated by the teachers.

Table 2 List of Hunger Signs and Options to Address (N=4)

Signs and Symptoms of Hunger	Options to Address Hunger
Asking for a snack	Feeding them healthy snacks during school and before they leave school
Asking constantly when lunch time will be	Making sure the child eats lunch at school
Sneaking food from kitchen or teachers	Making sure the child eats breakfast at school
	Backpack buddies program

Behavior

Teachers were also surveyed about disruptions in the classroom, and if these disruptions improve after a snack or meal. Some of the comments stated by the teachers since the initiation

of the Backpack Buddies program were "The students are less hungry after coming back on Monday", "Some students still show signs of hunger because they share the backpack with the entire family", and "Some students still have behavioral issues, but most have improved". Table 3 illustrates results on hunger disruptions and improvements.

Table 3 Hunger Disruptions and Improvements

Question	Yes	No
Are there behavior concerns in the classroom directly related to hunger?	n=3	n=1
Do behavior concerns improve after lunch or snack?	n=3	n=1
Have you identified the Backpack Buddies program to improve disruptive behavior in the classroom?	n=3	n=1

Survey participants identified other possible causes of disruption in the classroom, including class size (Number of students), classroom size (small room for # students), health issues (ADHD, L.D., etc.), lack of activity during the day, and hunger or limited resources of food. One teacher stated that "attention seeking personality" is a cause of disruption in the classroom. Table 4 displays the ranges and averages for the classroom disruption on a scale of one (being not an indication of disruption) and ten (being a leading indication of disruption).

Table 4 Possible Indications of Disruptions

Question	Range	Average
Class size (number of students)	2-9	7
Classroom size (Small room for # of students)	1-7	5
Health issues (ADHD, L.D., etc.)	6-8	7
Lack of activity during the day	3-8	5
Hunger or limited resources for food	2-9	6.25

Grades

The data suggested that there was little improvement, if any, in the grades of the children who have participated. Table 5, table 6, and table 7 show average grades through 2010-2011 years. Science and social studies were similar classes between all the grades to be able to compare between first through fifth grades. Kindergarten is not included because of a different class system. Grade A is translated into a 4, grade B is translated into a 3, grade C is translated into a 2, grade D is translated into a 1, and grade F is translated into a 0. Appendix E illustrates the grades received per student.

Table 5 Science and Social Studies Grade Letter for First to Second Grade (N= 6)

Term/Year	Average Grade Science	Average Grade Social Studies
Term 1 2010	4.00	3.33
Term 4 2011	3.33	3.33
Term 1 2011	2.67	2.83

Table 6 Science and Social Studies Grade Letter for Third to Fourth Grade (N=9)

Term/Year	Average Grade Science	Average Grade Social Studies
Term 1 2010	3.00	4.00
Term 4 2011	2.89	3.33
Term 1 2011	3.33	3.44

Table 7 Science and Social Studies Grade Letter for Fourth to Fifth Grade (N=5)

Term/Year	Average Science Grade	Average Social Studies Grade
Term 1 2010	3.67	3.33
Term 4 2011	3.00	3.20
Term 1 2011	3.40	2.00

The students are also graded on their social performance, task, and behavior. Table 8 below shows the average letter grades for the social task component for each of the grade levels. Abstract F illustrates the grades received by the individual child.

Table 8 Social Task Letter Grade (N=26)

Grade Level 2010-2011	First Term 2010	Fourth Term 2011	First Term 2011
Kindergarten to First (n=6)	2.16	2.67	2.33
First to Second (n=6)	2.33	3.00	2.83
Third to Fourth (n=9)	2.57	2.67	3.11
Fourth to Fifth (n=5)	3.00	2.80	2.80

Attendance

When comparing fall 2010 attendance to fall 2011 attendance with a two tailed t-test there was not a significant change ($M = 1.204$, $p = .071$ [two-tailed], df 21). The attendance had some improvements from first term to second term of 2010 with a noticeable increase in close to all the students in third term and then the attendance improves fourth term. Table 8 illustrates the average attendance by grade per term. Appendix G illustrates the attendance per student.

Discussion

Grades

The first guiding question was "Do children that are participating in the backpack program have improved grades in school after starting the program than before they were on the program?" The significance of this question was to see if children had improved cognitive function directly related to the Backpack Buddies program. Some of the grades did improve over the time span but there was little support that it was directly related to the Backpack Buddies program.

A factor that may affect the children's grades was the mobility of the homeless population. It was estimated that it takes a child four to six months to recover academically after transferring schools (Nunez, 2000). It was noted in the grades that there were many missing grades during different quarters that suggested that the students were transferring in or transferring out or both. Many students were not able to be compared and therefore not included in the data because they only had one or two quarters of information. It was estimated that roughly three-quarters of homeless children perform below grade level in reading and spelling, and half perform below grade level in math (Nunez, 2000). Across the country, one in five homeless children will repeat a grade which is twice the national average of children, this can cause low self esteem resulting in higher dropout rates and higher levels of crime (Nunez, 2000).

Attendance

The second guiding question "Since the start of the program has there been an improved school attendance?" The significance of this question is to see whether the Backpack Buddies program has a direct relationship with the students' attendance. During the short time span, the attendance was not significant and did not show a true correlation. The *t*-test between first quarter attendance of year 2010 and year 2011 indicated a possible impending relationship ($p = 0.07$). A larger population and data collection from more years may have strengthened the sample and indicated that attendance improves with the Backpack Buddies program.

It is estimated that only 87% of homeless children are enrolled in school in the United States and only 77% attend school regularly (National Coalition for the Homeless, 2012). Attendance is affected by many different factors including, weather, transportation, health, lack of sleep, homelessness, guardianship discrepancies, delays in transfer of school records, lack of immunization records, etc. McKinney Act's Education of Homeless Children and Youth, which

was established in 1987, is working to make it easier for homeless children to enroll in school and transfer. It is estimated that homeless children who transfer are 78% more likely to have poor attendance than those who do not transfer (Nunez, 2000). Students who miss more than 20 days of school during their first, second, and third grade years have a 66% drop out rate (Nunez, 2000). Nine students in the sample of twenty-six missed more than 20 days of school in the 2010-2011 school year with one student missing seventy-four days. Seventeen students of twenty-six missed less than two weeks of school during the 2010-2011 school year, but six of these students do not have attendance documented for at least one or two quarters suggesting these are transfer students.

Behavior

The third guiding question "How do teachers describe the impact of the backpack program and the outcomes of the program?" This question was designed to see how the teacher's view the Backpack Buddies program and its effectiveness with the students. One of the questions on the survey asked teachers "How has the Backpack Buddies program impacted student outcomes?" One response was, "Still seeing a few behavior disruptions in a few of the students. The others come to school more alert and not talking about food/lunch/snack or being hungry as often. With a happy belly they are more focused." It was also mentioned that some students have "attention seeking behavior" that may be a possible cause of disruptions. Attention seeking as defined "those behaviors which, through their very irritating nature, bring a child to the attention of a number of adults in a persistent manner over a lengthy period of time, causing great concern. We would exclude, for instance, the sudden reaction of a child to an upset at home lasting for a few days or weeks" (Mellor, 2009, pp. 26-35).

"Hunger and poor nutrition also negatively impact children's emotional wellbeing. Anxiety over getting enough food can result in high levels of stress, low self-worth, and aggressive behavior in children" (Nunez, 2000, pp. 51-72). Two quotes by teachers related to the Backpack Buddies program state "The students perform better in the classroom", and "I am happy students are getting enough food to fill their tummies over the weekend, but I haven't seen much improvement yet in behavior, attendance, or academics in my classroom". Another concerning statement by one of the teachers stated that some children are sharing their backpacks with younger siblings and parents. This does not allow the child to get the full effects of the backpack for their own benefit in education.

Looking at the other possible causes of behavior disruptions, it was noted that one teacher out of four rated the class size (number of students) as not an indication of disruption but only has a class size of twenty-one where the other teachers rated the class size as a major cause of disruption in the classroom with class sizes of twenty-four, twenty-four, and twenty-seven. Classroom size (small room for number of students) was also rated as a major indicator of disruption from the teachers with the larger class size. It was not listed as a disruption by the teacher who has the smaller class. Students with health issues such as ADAD, ADD, autism, L.D., etc., were all rated a moderated cause of disruption in the classroom. It is estimated in the United States that 16% of homeless children are in special education classes, a rate 33% higher than that of children nationally (Nunez, 2000, pp. 51-72).

The school districts homeless liaison made a few comments concerning the behavior of children receiving the Backpacks. It was feared the students would reject the backpacks of food for social stigma and embarrassment. This was contrary to what they found. The students were overjoyed to receive the backpacks of food and looked forward to them. They became full of

smiles and laughter receiving the backpacks and were extremely grateful. The left over backpacks are dispersed to older students in the middle school and high school; they too were overcome with joy and relief. One homeless high school student accepted the backpack with tears of thankfulness in their eyes.

Limitations

The major limitation to this study is the sample size of twenty-six students and only four teachers. In November 2010, one-hundred and twenty-five elementary students were accepted to receive the backpacks weekly. Only twenty-six of those students attended the school in fall 2010 to fall 2011. Some of the students were fifth graders and moved on to the middle school, the others were transfer students and came in to the school system and left before the appropriate data for this survey was able to be collected. Other limitations for the behavioral issues not only come from hunger but can also come from homelessness, health issues, transferring, attention seeking behavior, etc.

Conclusions

To conclude, the data leads to the belief that the there may be a future benefit for children participating in the Backpack Buddies program. Future research continuing this study may lead to a stronger significance ($p=0.07$) in attendance along with grades and behavior. With a larger sample size and longer periods of time it is possible to see that the Backpack Buddies program can make a difference in the lives of the children. It has the potential to provide stability in a child's life without fearing what they are going to eat over the weekend when they are not in school. It provides "happy tummies" as stated by a teacher which in turn can provide more focus in the classroom. This may not be the one intervention that is going to save the lives of homeless children but it is one intervention that can make a difference.

APPENDICES

APPENDIX A

LETTER OF SUPPORT

Letter of Support

DR. JAMES A. HESS, SUPERINTENDENT
218-333-3100 ext 105
Fax 218-333-3129

T. DENZER
DIRECTOR OF
SPECIAL EDUCATION
218-333-3100 ext 104
Fax 218-333-3129

J. HICKMAN
DIRECTOR OF
HUMAN RESOURCES
218-333-3100 ext 113
Fax 218-333-3127

C. LEINEN
DIRECTOR OF
BUSINESS SERVICES
218-333-3100 ext 125
Fax 218-333-3127

K. PALM
DIRECTOR OF
CURRICULUM & ADMIN SERVICES
218-333-3100 ext 103
Fax 218-333-3148

October 5, 2011

Dacia Bessler
Bemidji State University
Bemidji, MN 56601
deja_vu49@hotmail.com

Dear Ms. Bessler:
Bemidji Area Schools supports your study: *School Age Children: The Effects of Hunger*. Patricia Welte, Principal for J. W. Smith and Central Elementary, will provide information needed for your study. However, because of data privacy, she will not be able to provide individual student names. Any data provided will need to have a student ID number attached, so you are able to compile the information.

At the conclusion of your study, we ask that you also provide the district with a copy of the results. Good luck with your study.

Sincerely,

Kathy Palm
Director of Curriculum & Administrative Services
kpalm@bemidji.k12.mn.us

Cc: Patricia Welte, Principal J. W. Smith and Central Elementary
Angie Lauderbaugh, Homeless Liaison

APPENDIX B

INFORMED CONSENT

Informed Consent

You are invited to participate in a questionnaire titled "School Age Children: The Effects of Hunger" lead by Dacia Bessler of the Nursing Department at Bemidji State University under the supervision of Jeanine Gangeness. I hope to learn how the backpack program has impacted the school whether it is positive or negative. You were selected as a participant in this study because you are involved with students who use the backpack program and are faculty at JW Smith.

If you decide to participate, I will ask for you to fill out a questionnaire of some questions that will help me get a better understanding of the impact of the backpack program on the school and the students. The questionnaire will take between 20 and 30 minutes to complete. Please be as honest as you can be.

Your answers on this survey are completely confidential and will be released only as summaries in which no individual's answers can be identified. This study will produce data that will be distributed to you as well as the school and school board.

If you have any questions, please ask me. If you have any additional questions later, contact Dacia Bessler at bess1dac@live.bemidjistate.edu, or Jeanine E. Gangeness, PhD, RN, Professor Department of Nursing of Bemidji State University at jgangeness.bemidjistate.edu. We will be happy to answer any questions.

By filling out the survey you will be consenting to the use of the survey information in the study. Your time and information will help the school be able to further programs that will potentially help children in need. Your decision whether or not to participate will not prejudice your future relationships with me or Bemidji State University. If you decide to participate, you are free to discontinue participation at any time without prejudice. If you decide not to respond, please return the questionnaire to Dacia Bessler or Jeanine Gangeness.

Thank you very much for helping with this important study.

Sincerely,

Dacia Bessler
Nursing Student
Bemidji State University
bess1dac@live.bemidjistate.edu

Jeanine Gangeness, PhD, RN
Chair, Professor
Department of Nursing
Bemidji State University
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APPENDIX C

SURVEY

Survey

1. How many years have you been teaching?

2. What grade do you teach? Or what is your role in the school?

3. How many students are in your room?

4. How many participate in the Backpack Program?

5. How many students present on a daily basis as hungry?

6. What are some ways that students demonstrate hunger in the classroom?

7. What are the options for addressing a hungry student?

8. Do students who you assess to be hungry have behavior concerns in the class room?

9. Do behavior disruptions improve after a snack or lunch?

10. Have you identified the Backpack program to improve disruptive behavior in the classroom? How?

11. On a scale of 1-10 (1 being not an indication and 10 being a leading indicator) what are the leading issues that result in disruption of classroom behavior from students?

Class size (number of students)

1 2 3 4 5 6 7 8 9 10

Classroom size (Small room for # students)

1 2 3 4 5 6 7 8 9 10

Health issues (ADHD, L.D., etc.)

1 2 3 4 5 6 7 8 9 10

Lack of activity during the day

1 2 3 4 5 6 7 8 9 10

Hunger or limited resources for food

1 2 3 4 5 6 7 8 9 10

Any other issues?

12. How has the Backpack program impacted student outcomes?

Thank you for your time.

APPENDIX D

DEBRIEFING STATEMENT

Debriefing Statement

The purpose of this study was to find the impact of the backpack program on students and faculty at JW Smith. Based on the results of previous research, my hypothesis is that the backpack program impacts the students and faculties positively in that students receive better grades, have better attendance, and have fewer behavioral problems.

The results of this study will be posted in Bemidji State University Nursing Department along with at JW Smith and with the school board by May 2012. If you have any questions or you would like more information about this study, please contact me, Dacia Bessler at Bemidji State University by bess1dac@live.bemidjistate.edu, or Jeanine Gangeness, PhD, RN ,Chair, Professor, Department of Nursing, Bemidji State University, Sattgast 207M, 1500 Birchmont Drive NE, Box 15 Bemidji, MN 56601-2699. 218-755-3870. Fax: 218-755-4402. Jgangeness@bemidjistate.edu.

Thank you for participating in the study.

APPENDIX E

SCIENCE AND SOCIAL STUDIES LETTER GRADES

Science and Social Studies Letter Grades

Key

Grade Letter

- A = 4
- B = 3
- C = 2
- D = 1
- F = 0

Grade Term 1 2010	Grade Term 1 2011	Science Term 1 2010	Science Term 4 2011	Science Term 1 2011	Social Studies Term 1 2010	Social Studies Term 4 2011	Social Studies Term 1 2011
Kindergarten	First			3			3
Kindergarten	First			3			3
Kindergarten	First			3			3
Kindergarten	First			3			3
Kindergarten	First			3			3
First	Second		3	3	3	3	3
First	Second	4	4	2	4	4	3
First	Second		3	2		3	2
First	Second		3	3		3	3

First	Second		3	3	3	3	3
First	Second		4	3		4	3
Third	Fourth	2	2	3	4	2	3
Third	Fourth		3	4		4	4
Third	Fourth	4	4	4	4	3	4
Third	Fourth	3	4	4	4	3	4
Third	Fourth	4	3	3	4	3	4
Third	Fourth	3	2	3	4	4	3
Third	Fourth	3	2	2	4	3	3
Third	Fourth		4	3		4	3
Third	Fourth	2	2	4	4	4	3
Fourth	Fifth	3	0	2	2	2	0
Fourth	Fifth	4	4	4	4	4	3
Fourth	Fifth		3	4		3	2
Fourth	Fifth	4	4	4	4	4	2
Fourth	Fifth		4	3		3	3

ABSTRACT F

SOCIAL TASK LETTER GRADES

Social Task Letter Grade

Key

Grade Letter

- A = 4
- B = 3
- C = 2
- D = 1
- F = 0

Grade Term 1 2010	Grade Term 1 2011	Social Task Term 1 2010	Social Task Term 4 2011	Social Task Term 1 2011
Kindergarten	Kindergarten	3	2	3
Kindergarten	First	3	3	3
Kindergarten	First	2	3	2
Kindergarten	First	2	3	2
Kindergarten	First	2	3	2
Kindergarten	First	1	2	2
First	Second	3	4	3
First	Second	2	2	2
First	Second		2	3
First	Second		3	3
First	Second	2	3	3
First	Second		4	3

Third	Fourth	2	2	3
Third	Fourth		3	3
Third	Fourth	3	3	4
Third	Fourth	3	3	3
Third	Fourth	3	3	3
Third	Fourth	3	2	3
Third	Fourth	3	3	3
Third	Fourth		4	4
Third	Fourth	1	1	2
Fourth	Fifth	1	1	2
Fourth	Fifth	4	3	3
Fourth	Fifth		3	3
Fourth	Fifth	4	4	3
Fourth	Fifth		3	3

APPENDIX G

ATTENDANCE

Attendance

Grade Term 1 2010	Grade Term 1 2011	Absences Term 1 2010	Absences Term 2 2010	Absences Term 3 2010-2011	Absences Term 4 2011	Absences Term 1 2011
Kindergarten	Kindergarten	0	4.5	12	3.5	0
Kindergarten	First	7	7	4	14	3
Kindergarten	First	3	5	12.5	15	1.5
Kindergarten	First	11	13	20	30	9
Kindergarten	First	1.5	2	2	2	2
Kindergarten	First	6.5	5.5	7	10.5	5.5
First	Second	3	5	6	2	1
First	Second	5.5	11.5	8	4.5	3.5
First	Second	6	1.5	3	11	6.5
First	Second		1.5	4.5	4	3
First	Second	0	1	2	8	1
First	Second			3	3	1
Third	Fourth	6	9.5	2	4.4	2
Third	Fourth			2	2.5	2
Third	Fourth	0	6	3	3.5	4
Third	Fourth	2	1	0	0	0

Third	Fourth	0	0	5	0	2
Third	Fourth	5	3.5	7.5	10	7
Third	Fourth	0	1	8.5	4.5	1.5
Third	Fourth		0	5	3.5	0.5
Third	Fourth	1	2.5	1	1	0
Fourth	Fifth	11	12	16	28.5	0.5
Fourth	Fifth	3	3	6	2	0
Fourth	Fifth			2.5	2	1
Fourth	Fifth	1	8	3	4.5	0
Fourth	Fifth		1.5	4	4	3

APPENDIX H

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