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Emergency Preparedness among College Students at the University of Arkansas

An honors thesis/project in partial fulfillment of the
requirements for the degree of Honors

Baccalaureate in Nursing

By

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Honors Nursing Student

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University of Arkansas

This honors undergraduate thesis/project is approved for recommendation to the College of
Education and Health Professions Honors Council.

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Emergency Preparedness Levels of College Students at the University of Arkansas

Students at the University of Arkansas could be susceptible to multiple forms of disaster including severe winter weather, earthquakes, tornadoes, lightning, floods, toxin release, radiological release from nuclear power plants, infectious diseases, food contamination, fires, active shooters, and bomb threats (Federal Emergency Management Agency [FEMA], 2013). Since 2010, there have been 12 major disaster declarations for Arkansas (FEMA, 2017). Severe storms, tornadoes, and flooding were the cause of disaster declarations (FEMA, 2017). Between 2005 and 2008, there were 220 murder/manslaughter cases, 14,064 sex offenses, and 21,675 aggravated assaults on campuses in the United States (United States Secret Service, United States Department of Education, & Federal Bureau of Investigation, 2010). In 2016, there were five rape cases and one illegal weapon possession arrest on the University of Arkansas-Fayetteville campus (University of Arkansas Police Department, 2017).

Although multiple organizations are established to protect colleges in an emergency, many universities are not fully compliant with guidelines (Connolly, 2012). In 2004, the Department of Homeland Security (DHS) established the National Incident Management System (NIMS) and the National Response Framework to standardize emergency planning and procedures (DHS, 2008). Only 77% of universities were compliant with NIMS (Connolly, 2012). The unpredictability of natural disasters, coupled with the increase in targeted school violence, served as the impetus for various federal initiatives intended to protect university populations (FEMA, 2003). The purpose of this study was to determine the emergency preparedness levels of college students at the University of Arkansas.

Review of Literature

Emergency management includes preparedness, response, mitigation, and recovery (Worsely & Beckering, 2007). To prepare for a manmade or natural disaster, colleges should

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first have a hazard analysis. A hazard analysis is a comprehensive list of all the plausible disasters that could affect the university (Worsely & Beckering, 2007). The purpose of an emergency management plan is to determine strengths and weaknesses of the universities' current proposed method of dealing with an emergency. Colleges report only being prepared for emergencies they have previously been exposed to (Mitroff, Diamond, & Alpaslan, 2006). Research suggests training and education is an area that is lacking in emergency planning (Mann, 2007). Estimations of colleges performing emergency training exercises range from 28% to 73% (Cheung, Basiaga, & Olympia, 2014; Connolly, 2012). Training exercises demonstrate preparedness if successful and show areas of improvement if unsuccessful (Jackson & McKay, 2011). However, less than half of students receive emergency preparedness information or training during student orientation (Cheung et al., 2014). Emergency preparedness videos could be an adequate way to increase education in emergency planning. Students who viewed an emergency preparedness video were more confident in their university, their ability to respond to an emergency on campus, and more informed of emergency information (Sattler, Kirsch, Shipley, Cocke, & Stegmeier, 2014).

College students seek information differently than the general population (Koskan et al., 2012). Most campuses have four notification systems. The highest percentage of methods in use include email, website, text message, and landline phones (Schafer, Heiple, Giblin, & Burruss, 2010). Seventy-five percent of universities have emergency information on their websites (Guth, 2013). However, only 15% of the websites contained emergency information in an easily accessible place (Guth, 2013). It takes an average of two clicks on a university website to reach the emergency safety information (Dameron, DeTardo-Bora, & Bora, 2009). The best approach in using an emergency notification system is to be multimodal and easy accessible (Staman,

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Katsouros, & Hach, 2009). This involves using multiple different communication methods to increase chances of getting information to students in a timely manner. RazALERT is the primary emergency notification system for the University of Arkansas (University of Arkansas, 2018). It is most commonly used to send inclement weather notifications (University of Arkansas, 2018). RazALERT notifications are sent to all university e-mails (University of Arkansas, 2018). However, university faculty and students have to opt in to have these notifications sent to their personal cellular device (University of Arkansas, 2018).

College students have an increased vulnerability to disasters in comparison to the general population (Tanner & Doberstein, 2015). Factors leading to vulnerability include close living quarters, lower incomes, none or little experience with disasters, young age, not viewing themselves in imminent danger, and having unrealistic optimism that they are at a lower risk of being involved in a disaster (Koskan, Foster, Karlis, Rose, & Tanner, 2012; Tanner & Doberstein, 2015; Suls, Rose, Windschitl, & Smith, 2013).

Research indicates only around 30 percent of the college population have emergency kits (Tanner & Doberstein, 2015). Any emergency preparedness supplies students may possess are considered coincidental as they are items of everyday use (Tanner & Doberstein, 2015). Claborn (2010) noted over half of students had a three-day supply of food and a first aid kit, but less than a third of students had a radio, generator, or extra supply of medication (Claborn, 2010). Significant deficits in emergency preparedness knowledge among college students exists with only 2% being able to state the nearest emergency shelter location and only 8% having emergency supplies (Simms, Kusenbach, & Tobin, 2013).

Research findings suggests university enrollment size affects emergency preparedness levels. Larger schools (10,000-30,000 students) are more likely to have adequate emergency

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policies and plans (Seo, Torabi, Sa, & Blair, 2012). Geographic location of the university is another indicator of emergency preparedness with universities in the Southern region being less likely to be prepared for an emergency (Seo et al., 2012). Kapucu and Khosa (2012) noted universities that received the Emergency Management for Higher Education grant have a higher level of emergency preparedness than universities that did not receive such grant funding (Kapucu & Khosa, 2013).

Conceptual and Operational Definitions

For the purposes of this research, emergency preparedness was conceptually defined as a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action to ensure effective coordination during incident response (DHS & FEMA, 2017). Emergency preparedness was operationally defined through the administration of the Preparedness Assessment instrument. The Preparedness Assessment instrument contains 36 items identified by Ready.gov as being essential to emergency preparedness.

Design and Methods

Research Question

This study examines the self-reported emergency preparedness level of students at the University of Arkansas with the following research question: 1) What are the emergency preparedness levels among college students at the University of Arkansas?

Sample

Following Institutional Review Board approval, a convenience sampling of 606 students throughout the University of Arkansas were samples. The sample was collected by seven faculty members in the College of Engineering, School of Human Environmental Sciences, the Exercise Science Research Center, and the College of Arts and Sciences. This study is a cross-sectional

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study to ascertain self-reported emergency preparedness levels. Inclusion criteria were that all participants must be 18 years or older, be able to read and write in English, and be an undergraduate or graduate student at the University of Arkansas.

Instruments

The data was collected using a researcher developed questionnaire titled, “Preparedness Assessment”. Three experienced nurse researchers confirmed face validity of the instrument. The instrument consists of 36 multiple choice questions pertaining to items identified by Ready.gov as being essential to emergency preparedness. Necessary items include a three-day supply of food and water, prescription medications, battery powered or hand crank radio and NOAA weather radio, flashlight, first aid kit, dust mask, whistle, wrench, manual can opener, clothing, warm blankets, local maps, cash or traveler’s checks, and important family documents in waterproof container. Emergency preparedness among college students will be assessed by asking dichotomous questions pertaining to whether or not participants possess recommended items of preparedness (e.g. evacuation plans, food, water, first aid kit, etc.). Finally, twenty demographic questions pertaining to age, marital status, dependents, concerns about issues affecting the community, etc. are also included.

Results

Data were analyzed using SPSS version 25. No statistically significant differences were noted among the classes the survey was distributed in. Most participants have never been married ($N = 568$), white ($N = 512$), and female ($N = 493$). See Table 1 for detailed demographics.

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Table 1: Participant Demographics.

Demographic Category	Sample (%)
Region of the United States	
New England	N= 1 (0.2)
Great Lakes	N= 9 (1.4)
Plains	N= 82 (13.9)
Rocky Mountains	N= 1 (0.2)
Southeast	N= 297 (49.9)
Southwest	N= 185 (31.3)
Far West	N= 3 (0.6)
Other than United States	N= 11 (2.2)
Sex	
Male	N= 110 (18.2)
Female	N= 493 (81.8)
Race	
American Indian/Alaska Native	N= 12 (2.0)
Asian/Asian American	N= 17 (2.8)
Black/African American/Afro-Caribbean	N= 29 (4.8)
Hispanic/Latino	N= 31 (5.1)
White/Caucasian	N= 512 (84.9)
Other	N= 2 (0.3)
Marital Status	
Married	N= 20 (3.3)
Divorced/Separated	N= 3 (0.5)
Never married	N= 568 (93.9)
Other	N= 14 (2.3)
Current Household Income	
less than \$49,999	N= 175 (29.7)
\$50,000 - \$99,999	N= 136 (23.3)
\$100,000 or more	N= 277 (47.1)
Level of Education Completed	
High school graduate	N= 69 (11.4)
Some college	N= 439 (72.4)
Associate's degree	N= 36 (5.9)
Bachelor's degree	N= 47 (7.8)
Post graduate studies	N= 15(2.5)
Employment	
Unemployed	N= 269 (44.5)
Working part time	N= 260 (43.0)
Working full time	N= 25 (4.1)
Other	N= 51 (8.4)
Age	
Mean	21.86
Minimum	19
Maximum	54

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For the research question “What are the emergency preparedness levels among college students at the University of Arkansas?”, the frequency and percent of a particular item of preparedness possessed by a participant was calculated. Detailed analysis can be reviewed in Appendix A. A finding of interest was that 41.5% ($N = 251$) participants stated they believed they were prepared for an emergency for 72 hours after the emergency. However, a review of the items required to be prepared indicates much of what participants had were in the home and not in a kit. For example, only eight respondents reported having a 3-day supply of food that will not spoil for all those living with them in a kit. Only six participants reported having a supply of at least one gallon of water per day for each person in the home for three days (further details noted in Appendix A). Emergency preparedness varied little across sociodemographic dimensions, explaining virtually no variance.

Discussion

Most participants were unmarried, white female college students from the Southeast/Southwest regions of the United States. According to the analysis, 73% of students had not experienced a disaster or community crisis. Only 50% of students were concerned with health threats and socioeconomic issues affecting their community; whereas less than half of students were concerned about disasters. Students found natural disasters more concerning than intentional/unintentional disasters. This is concerning because college students are susceptible to all forms of disaster and have increased vulnerability to disasters (Tanner & Doberstein, 2015). If students are not concerned about disasters, they are less likely to be prepared for them.

College students at the University of Arkansas are overwhelmingly unprepared for an emergency. Over 90% of students do not have an evacuation plan written down. Seventy

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percent of students self-reported having some of the necessary preparedness items in their home including a hand operated can opener, sleeping bag, clothing, first aid kit, personal sanitation, hygiene, and dental care items. However, only around 2% of students had emergency preparedness items in a specific, easily accessible kit. If evacuation was necessary, over half of students reported not having important documents, a local road map, or extra prescription medications in a specific area for them to grab quickly to take with them. Many disasters occur with limited to know warning. With the average lead time for a tornado warning being 13 minutes, it would be nearly impossible for students to gather all necessary supplies before seeking shelter in a safe area of their home (National Oceanic and Atmospheric Administration, 2011). When disaster strikes, students need to be able to survive for 72 hours without access to power, food, or water (FEMA, 2017). Only 60% of students had a 3-day supply of food in their home and less than 35% had water. If electricity was unavailable, less than half of students have a NOAA weather radio or matches. If college students are not prepared on the most basic level for a disaster, it cannot be assumed that all students would remain safe in the wake of disaster. Students reported having first aid kits and water purification supplies, but 76% of students had no emergency reference materials such as a first aid book or water purification instructions to aid their efforts in an emergency. It is not enough for students to have the supplies; they need to understand how to appropriately use it.

These young individuals are leaving their homes and becoming autonomous without any conception of emergency preparedness. More research needs to be done to determine how to increase college students interest and willingness to become personally prepared for a disaster. Also, more research needs to address the effects of preparedness education on the emergency preparedness among college students. College students must have knowledge regarding disasters

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and the preparedness items identified by Ready.gov to be adequately prepared for an emergency.

With the staggering low emergency preparedness levels of students from the University of Arkansas, emergency preparedness education among college students is critical.

College students' emergency preparedness levels can be improved by increasing awareness of disaster concerns and the necessary emergency preparedness items. Factors that increase preparedness include having a written emergency plan in place, supply of food and water for three days, emergency reference materials, first aid kit, NOAA weather radio, personal hygiene and sanitation items, local road map, important family documents, and cash. All preparedness supplies need to be kept in a specific location or kit. Furthermore, prescription medications should be checked frequently for expiration dates.

Limitations

Participant demographics may affect the generalizability of this study because over 80% of participants were white females in which 94% had never been married. Social desirability bias may affect the results of this study because the participants will know the purpose of the study was to determine self-reported emergency preparedness and they may not wish to appear unprepared, which could be perceived with a negative connotation. However, the investigators will encourage participants to respond honestly and indicate the confidentiality of the results.

Conclusion

College students are leaving their homes to attend universities and become autonomous for the first time in their lives. Although they are increasingly vulnerable to disasters, majority of students do not find themselves concerned about disasters. With no prior experience in disaster preparedness, they are overwhelmingly underprepared. Most students had no emergency plan in place or a single emergency preparedness item in a kit. Emergency preparedness will

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help a university and students respond to an emergency in a timely, orderly manner (U.S. Department of Education, 2007). Through determining the emergency preparedness levels of students, exploitation of weaknesses in the current emergency management system can be identified (FEMA, 2003). The results of this study indicate that college students are unprepared for an emergency. College students lack the necessary items and education required to be prepared. The University of Arkansas can tailor its emergency management efforts to the specific concerns identified by students (U.S. Department of Education, 2007). The University of Arkansas can implement disaster education to increase preparedness among college students, such as having a written emergency plan in place, supply of food and water for three days, emergency reference materials, etc. in an easily accessible kit. Once emergency education has been implemented, college students' emergency preparedness levels may increase. It is hopeful that, as a result, college students who are affected by unpredictable disasters in the future will be more prepared and remain safe in the wake of disaster.

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Appendix A

Emergency Preparedness Items

Preparedness Item	Sample (%)
Written Evacuation Plan	
Yes, I have	<i>N</i> = 56 (9.2)
No, I have not	<i>N</i> = 550 (90.8)
Everyone in Home Aware of Evacuation Plan	
Yes, they are	<i>N</i> = 149 (24.6)
No, they are not	<i>N</i> = 457 (75.4)
Car Available to Use For Evacuation	
Yes, I do	<i>N</i> = 583 (96.2)
No, I do not	<i>N</i> = 23 (3.8)
Three Day Supply of Non-Perishable Food	
Yes, in home	<i>N</i> = 363 (60.0)
Yes, in kit	<i>N</i> = 8 (1.3)
Yes, in both	<i>N</i> = 9 (1.5)
No, I do not	<i>N</i> = 225 (37.2)
Water Supply of One Gallon for Each Person in the Home for Three Days	
Yes, in home	<i>N</i> = 199 (32.9)
Yes, in kit	<i>N</i> = 6 (1.0)
Yes, in both	<i>N</i> = 4 (0.7)
No, I do not	<i>N</i> = 395 (65.4)
Hand Operated Can Opener	
Yes, in home	<i>N</i> = 542 (89.7)
Yes, in kit	<i>N</i> = 11 (1.8)
Yes, in both	<i>N</i> = 9 (1.5)
No, I do not	<i>N</i> = 42 (7.0)
Sleeping Bag or Warm Blanket Per Person	
Yes, in home	<i>N</i> = 535 (88.4)
Yes, in kit	<i>N</i> = 14 (2.3)
Yes, in both	<i>N</i> = 9 (1.5)
No, I do not	<i>N</i> = 47 (7.8)
First Aid Kit	
Yes, in home	<i>N</i> = 438 (72.5)
Yes, in kit	<i>N</i> = 59 (9.8)
Yes, in both	<i>N</i> = 35 (5.8)
No, I do not	<i>N</i> = 72 (11.9)
Moist towelettes, Garbage Bags, and Plastic Ties for Personal Sanitation	
Yes, in home	<i>N</i> = 471 (77.9)
Yes, in kit	<i>N</i> = 20 (3.3)
Yes, in both	<i>N</i> = 10 (1.7)
No, I do not	<i>N</i> = 104 (17.2)
Household Chlorine Bleach and a Medicine Dropper for Water Purification	

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Yes, in home	<i>N</i> = 254 (42.0)
Yes, in kit	<i>N</i> = 10 (1.7)
Yes, in both	<i>N</i> = 5 (0.8)
No, I do not	<i>N</i> = 336 (55.5)
Dental Care Items like Toothbrush and Toothpaste	
Yes, in home	<i>N</i> = 557 (92.1)
Yes, in kit	<i>N</i> = 14 (2.3)
Yes, in both	<i>N</i> = 14 (2.3)
No, I do not	<i>N</i> = 20 (3.3)
Emergency Reference Materials such as a First Aid Book or Information from www.ready.gov	
Yes, in home	<i>N</i> = 122 (20.3)
Yes, in kit	<i>N</i> = 15 (2.5)
Yes, in both	<i>N</i> = 7 (1.2)
No, I do not	<i>N</i> = 458 (76.1)
Soap and Other Personal Hygiene Supplies	
Yes, in home	<i>N</i> = 562 (92.9)
Yes, in kit	<i>N</i> = 11 (1.8)
Yes, in both	<i>N</i> = 15 (2.5)
No, I do not	<i>N</i> = 17 (2.8)
Dust Mask	
Yes, in home	<i>N</i> = 136 (22.6)
Yes, in kit	<i>N</i> = 13 (2.2)
Yes, in both	<i>N</i> = 6 (1.0)
No, I do not	<i>N</i> = 448 (74.3)
Battery Powered or Hand Crank Radio and a NOAA Weather Radio with Tone Alert and Extra Batteries	
Yes, in home	<i>N</i> = 186 (30.7)
Yes, in kit	<i>N</i> = 16 (2.6)
Yes, in both	<i>N</i> = 8 (1.3)
No, I do not	<i>N</i> = 395 (65.3)
Flashlight for Every Person in Home with Extra Batteries	
Yes, in home	<i>N</i> = 313 (51.7)
Yes, in kit	<i>N</i> = 15 (2.5)
Yes, in both	<i>N</i> = 13 (2.1)
No, I do not	<i>N</i> = 264 (43.6)
Matches in Waterproof Container	
Yes, in home	<i>N</i> = 121 (20.0)
Yes, in kit	<i>N</i> = 17 (2.8)
Yes, in both	<i>N</i> = 7 (1.2)
No, I do not	<i>N</i> = 459 (76.0)
Whistle	
Yes, in home	<i>N</i> = 227 (37.5)
Yes, in kit	<i>N</i> = 16 (2.6)
Yes, in both	<i>N</i> = 8 (1.3)
No, I do not	<i>N</i> = 354 (58.5)

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Local Road Map	
Yes, in home	<i>N</i> = 220 (36.4)
Yes, in kit	<i>N</i> = 10 (1.7)
Yes, in both	<i>N</i> = 5 (0.8)
No, I do not	<i>N</i> = 370 (61.2)
Cash or Traveler's Checks and Change	
Yes, in home	<i>N</i> = 389 (64.5)
Yes, in kit	<i>N</i> = 5 (0.8)
Yes, in both	<i>N</i> = 5 (0.8)
No, I do not	<i>N</i> = 204 (33.8)
Important Family Documents such as Copies of Insurance Policies, Identification, and Bank Account Records in a Waterproof, Portable Container	
Yes, in home	<i>N</i> = 299 (49.5)
Yes, in kit	<i>N</i> = 3 (0.5)
Yes, in both	<i>N</i> = 5 (0.8)
No, I do not	<i>N</i> = 297 (49.2)
Mess Kits, Paper Cups, Paper Plates, Plastic Utensils, and Paper Towels	
Yes, in home	<i>N</i> = 450 (74.4)
Yes, in kit	<i>N</i> = 8 (1.3)
Yes, in both	<i>N</i> = 1 (0.2)
No, I do not	<i>N</i> = 146 (24.1)
Complete Change of Clothing including a Long-Sleeved Shirt, Long Pants, and Sturdy Shoes Set Aside	
Yes, in home	<i>N</i> = 336 (55.6)
Yes, in kit	<i>N</i> = 7 (1.2)
Yes, in both	<i>N</i> = 2 (0.3)
No, I do not	<i>N</i> = 259 (42.9)
Wrench or Pliers to Turn Off Utilities (Water, Gas, Propane, etc.)	
Yes, in home	<i>N</i> = 459 (76.0)
Yes, in kit	<i>N</i> = 11 (1.8)
Yes, in both	<i>N</i> = 9 (1.5)
No, I do not	<i>N</i> = 125 (20.7)
Comfort Items such as Books, Games, and Toys for Children	
Yes, in home	<i>N</i> = 461 (76.2)
Yes, in kit	<i>N</i> = 2 (0.3)
Yes, in both	<i>N</i> = 2 (0.3)
No, I do not	<i>N</i> = 140 (23.1)
Extra Prescription Medications	
Yes, in home	<i>N</i> = 170 (46.3)
Yes, in kit	<i>N</i> = 1 (0.3)
Yes, in both	<i>N</i> = 2 (0.5)
No, I do not	<i>N</i> = 194 (52.9)
N/A	<i>N</i> = 238 (39.3)
Copies of Prescription Medications Prescription	
Yes, in home	<i>N</i> = 36 (9.8)

Emergency Preparedness Levels of College Students at the University of Arkansas

Yes, in kit	<i>N</i> = 1 (0.3)
No, I do not	<i>N</i> = 331 (89.9)
N/A	<i>N</i> = 237 (?)