Impact of Student Fatigue on Student Outcomes at Three Points in a BSN Nursing Program

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Conflict of Interest

- This study was supported in part by a research grant from the Phi Pi Chapter of Sigma Theta Tau International Nursing Honor Society

- The presenters, Dr. M. Spies and Dr. E. Poole are employed at Chamberlain College of Nursing, Chamberlain University and have no conflicts of interest to report

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Objectives

The learner will be able to:

- Identify the research problem, question and theoretical model of the cross-sectional, exploratory study

- Discuss methodology and findings of the cross-sectional, exploratory study

- Apply the findings of the cross-sectional, correlational, exploratory study

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Background: **Genesis of Study**

- Non-traditional students

    – Working adults with families

    – Year round programming

- Stress and anxiety of nursing students (Dawson, 2019)

- Classroom observations supported by Literature: Sleepiness in class (Demir, 2017; Huang, Yang, Wu, Liu, & Chen, 2014)

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Review of Literature

- Fatigue reported in BSN students

  - Rella, Winwood, & Lushington, 2009

- Daytime sleepiness in students

  - Abdalqader, Mohammed, Alhoot, Alwan, & Abdul Halim, 2018

  - Demir, 2017

  - Huang, Yang, Wu, Liu, & Chen, 2014

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Theoretical Framework

- Roy's Theory of Adaptation (Phillips, 2010)

  – Individual (nursing student) develops adaptive (ineffective or effective) response to stimuli (attending nursing school)

- Watson's Theory of Caring (Jesse, 2010)

  – Allows us to place emphasis on caring for self

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Methodology

Research Questions

- What is the degree of fatigue experienced by prelicensure students in a BSN program?

- Does the degree of fatigue experienced by prelicensure students in a BSN program differ by placement in the program (entry, mid-point, end of program)?

- Does the degree of fatigue experienced by prelicensure students in a BSN program predict academic outcomes measured the AA1 (Academic Assessment 1) and AA3 (Academic Assessment 3)?

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Methodology: **Study Design And Sample**

- Cross-sectional, descriptive, correlational study

- Participants were pre-licensure BSN students at three points in the program:

  - **Entry to program:** First nursing course

  - **Mid-program:** Adult Health Nursing course

  - **End of program:** Last nursing course

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Methodology: **Sampling Process**

- Human subjects protection – the study was approved by the university Institutional Review Board (IRB)

- All students in the pre-licensure BSN program at the three designated points in the curriculum were sent a survey

- An initial invitation and one reminder were sent via email:

  - Once students chose to participate, they clicked on a link that provided a consent form outlining the study purposes and procedures

  - Students indicated consent by proceeding to the survey

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Methodology: **Data Collection**

- Data were collected by a survey distributed by Qualtrics

- Occupational Fatigue and Early Recovery Scale (OFER) (Winwood, Winefield, Dawson, & Lushington, 2005)

  - 15 item Likert scale

  - 0 = Strongly Disagree

  - 6 = Strongly Agree

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Methodology: **Data Collection (Cont.)**

- Range of possible scores for total instrument: 0-100
  - Validity and reliability
    - Has strong convergent and discriminant validity
    - Cronbach's alpha:
      - Acute Fatigue (AF): $r = 0.82$
      - Persistent Fatigue (PF): $r = 0.75$
      - Chronic Fatigue (CF): $r = 0.94$

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OFER Scale

- Three subscales:

  - **Acute Fatigue:** Experienced at the end of the work day

  - **Persistent Fatigue:** Lack of recovered energy before the next work day

  - **Chronic Fatigue:** A maladaptive response to Persistent Fatigue

    - Has both physical and emotional components

    - Has a depressive element

- Range of possible scores on each subscale: 0-100

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OFER Scale (Cont.)

- Conceptually:

  – Acute Fatigue that Persists can become Chronic Fatigue

    - Elevated fatigue levels can decrease academic performance; this relationship may be affected by time commitments other than the academic role

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Methodology: **Data Collection**

- Other Variables: Possible Covariates

  – Gender and age

  – Round trip drive time to campus: hours per week

  – Round trip drive times to clinical experience: hours per week

  – Family responsibilities: hours spent on per week

  – Paid employment: hours worked per week

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Methodology: **Data Collection (Cont.)**

- Academic Assessment: Dependent Variable

  - AA1: Standardized test given to the students at mid-program

  - AA3: Standardized test given to the students in the last course in the curriculum

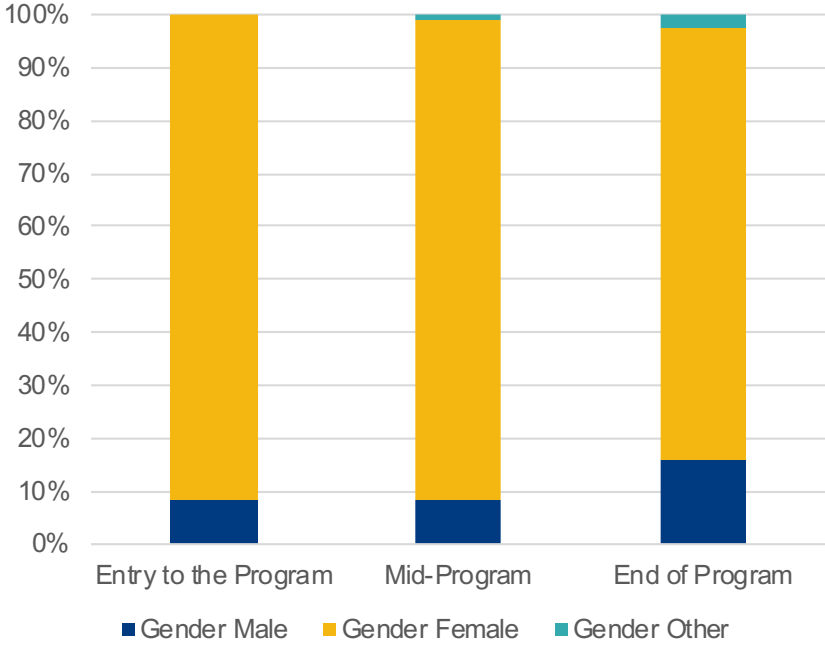CHAMBERLAIN
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Results

Description of Sample

- Completed surveys returned: n = 346 (8.6 percent)

- Distribution by placement in the program:

  - Entry to Program: n = 85 (24.6 percent of sample)

  - Mid-Program: n = 193 (55.7 percent of sample)

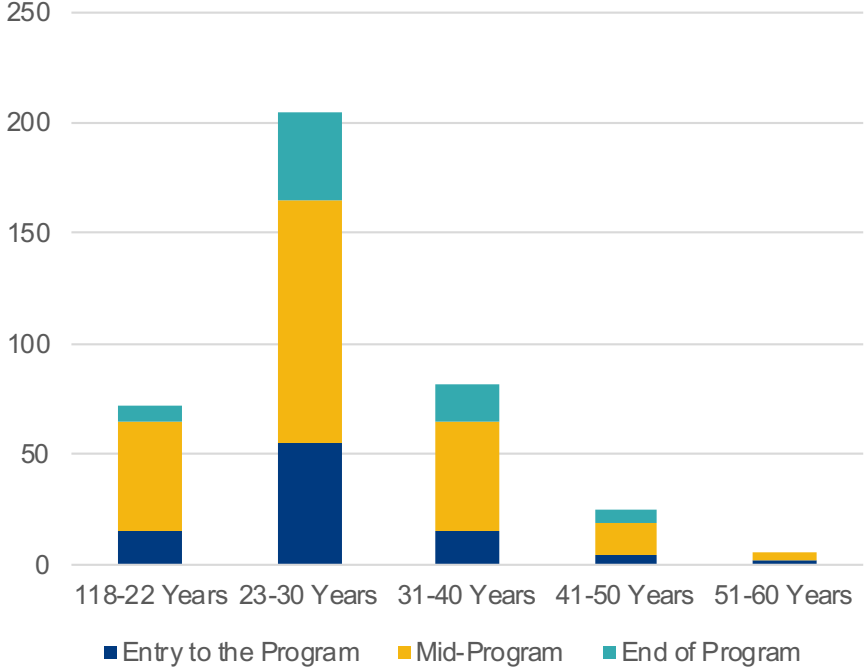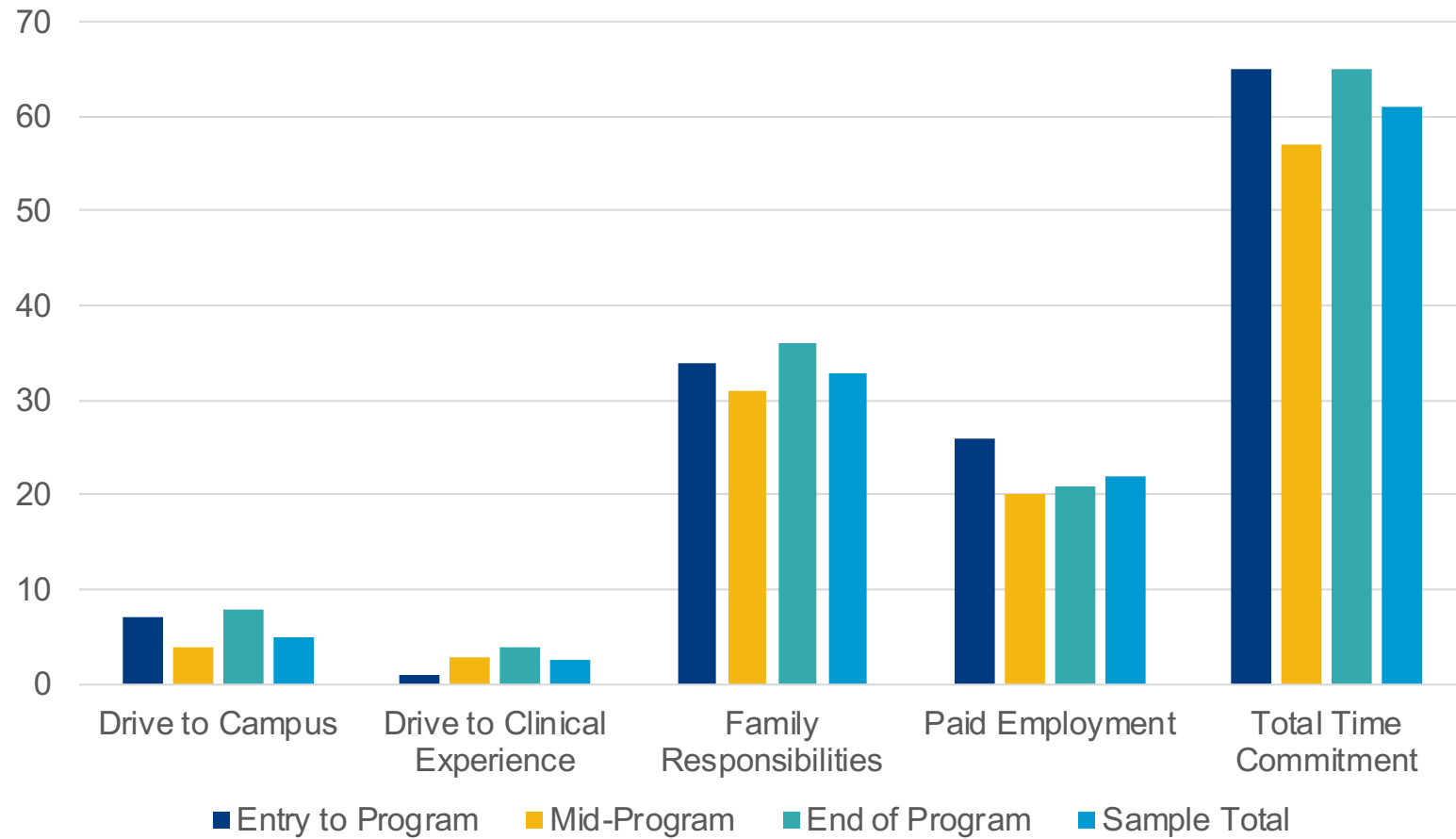 - End of Program: n = 68 (19.7 percent of sample)

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Description of Sample (Cont.)

Gender by Placement in the Program

Age by Placement in Program

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Time Commitments

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Academic Assessment

Overall Academic Assessment Scores		
	AA1 Score	**AA3 Score**
Mean (SD)	61.65 (9.17)	76.02 (7.99)
Minimum	33	55
Maximum	82	91

Overall Level of Fatigue in the Sample

	Total Fatigue Score	Chronic Fatigue	Acute Fatigue	Persistent Fatigue
Mean	49.40	52.88	54.19	57.86
Median	51.00	53.33	56.67	63.33
Mode	62.00	53.00	60.00	63.00
Std. Deviation	15.34	24.54	11.54	24.52
Minimum	12.00	0.00	10.00	0.00
Maximum	78.00	100.00	93.00	100.00

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Total Level of Fatigue Scores by Placement in Program

Total Fatigue Scores	
	Mean (SD)
Entry to Program	35.9 (13.27)
Mid-Program	54.66 (13.51)
End of Program	51.24 (12.49)
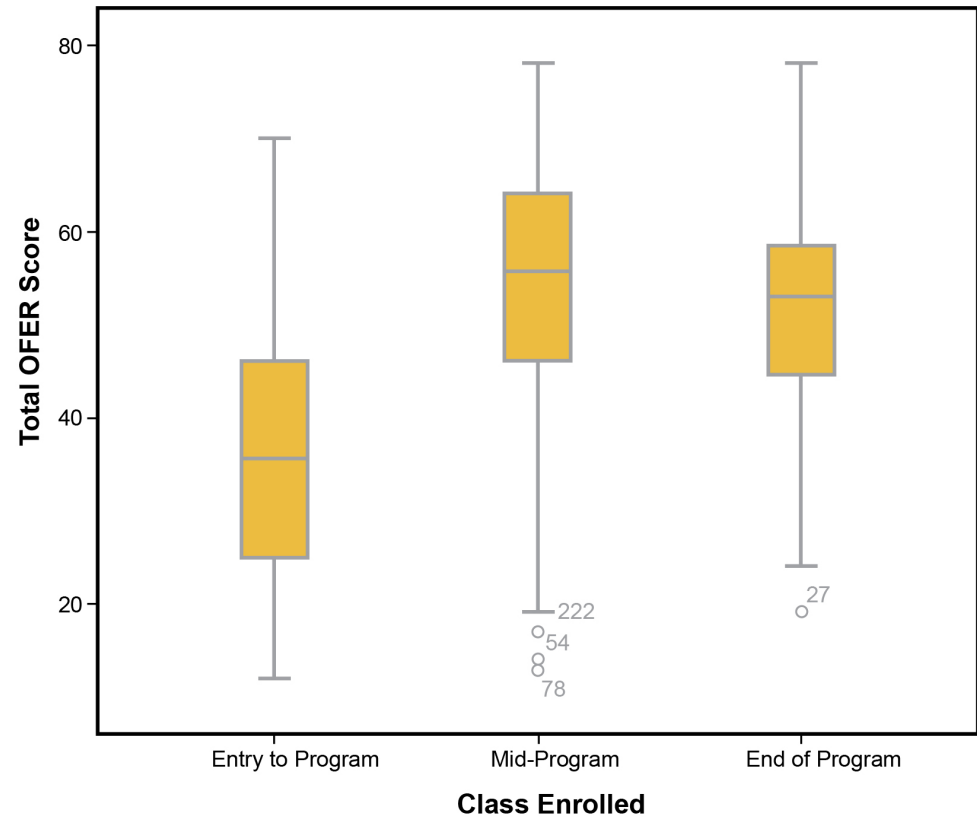
Acute Fatigue Scores
by Placement in Program

Acute Fatigue Scores	
	Mean (SD)
Entry to Program	50.31 (13.38)
Mid-Program	55.82 (10.93)
End of Program	54.61 (8.74)

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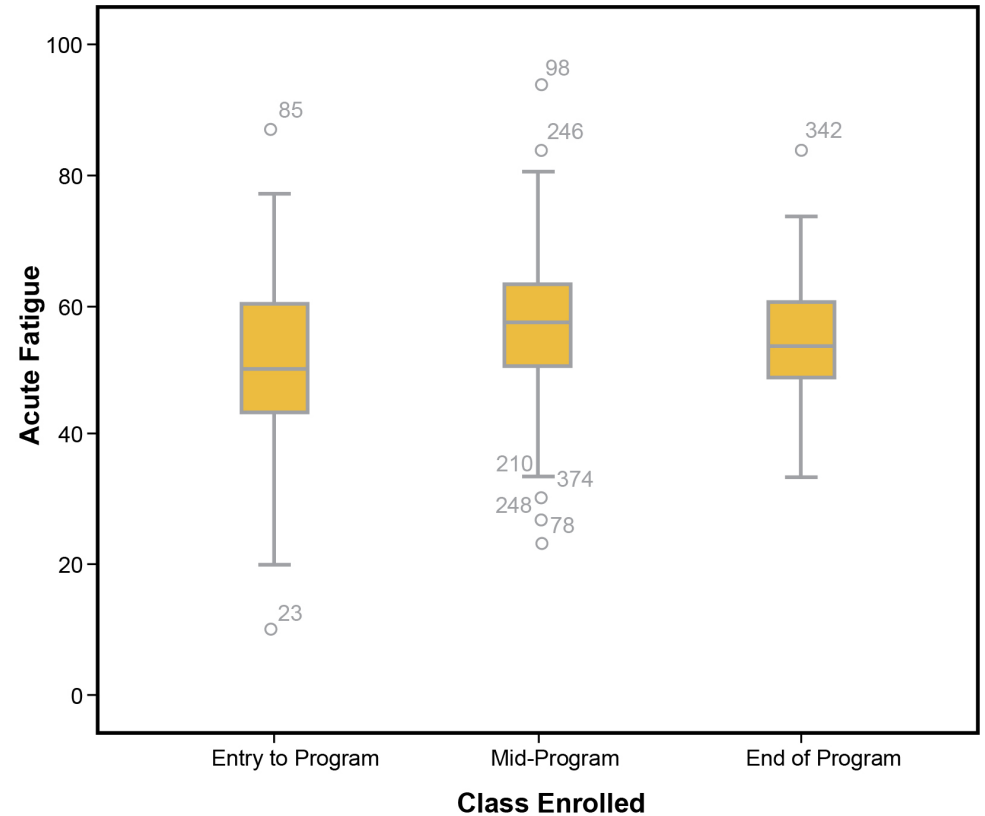
Persistent Fatigue Scores by Placement in Program

Persistent Fatigue Scores	
	Mean (SD)
Entry to Program	35.98 (13.27)
Mid-Program	65.84 (22.17)
End of Program	58.38 (21.22)
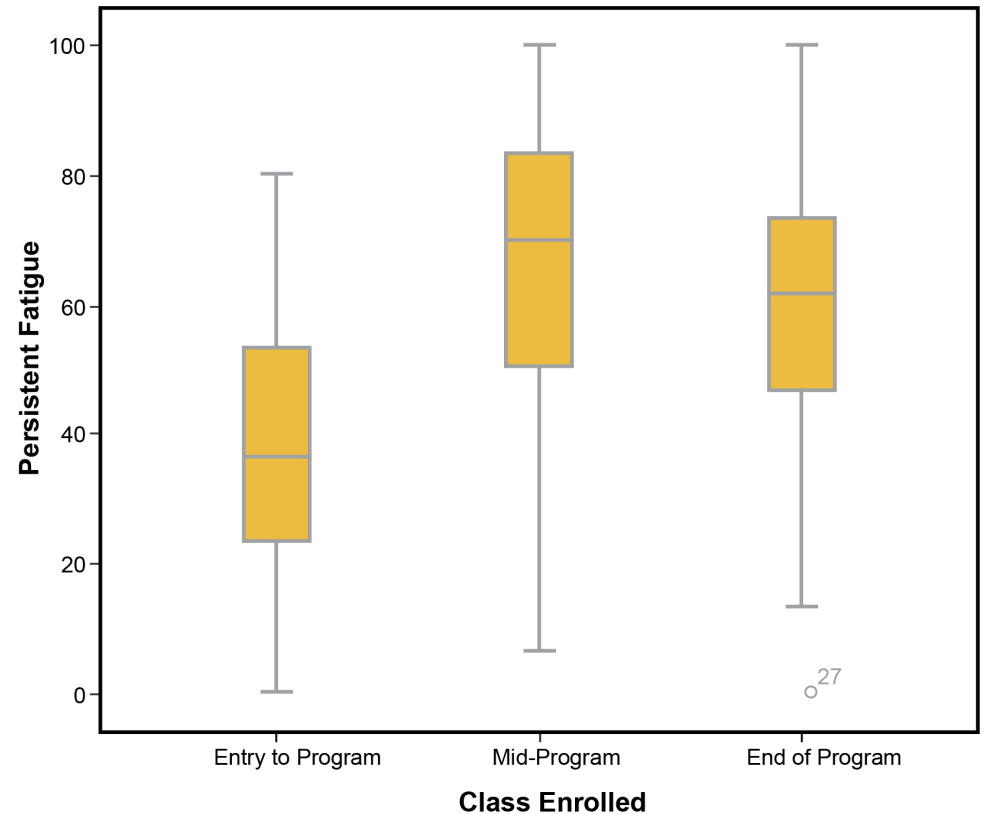
Chronic Fatigue Scores by Placement in Program

Chronic Fatigue Scores	
	Mean (SD)
Entry to Program	32.24 (21.58)
Mid-Program	60.55 (21.92)
End of Program	57.79 (20.32)

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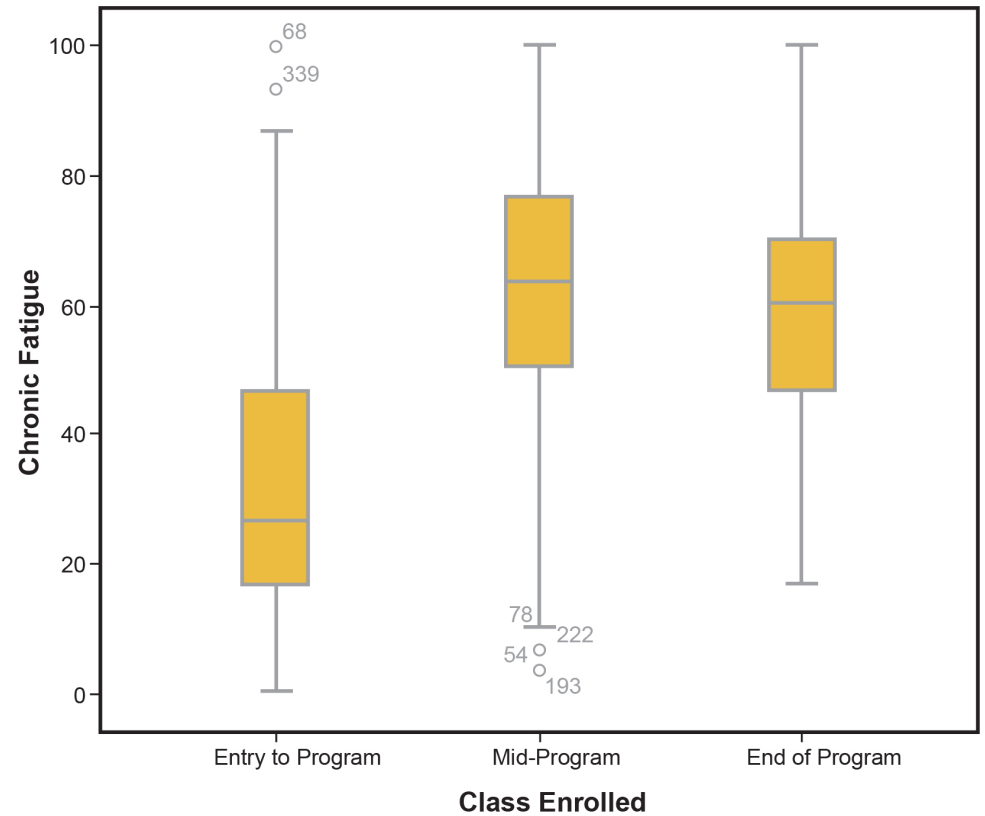
Correlations between Fatigue Scores and Academic Performance

	Total Fatigue Score	Acute Fatigue	Persistent Fatigue	Chronic Fatigue
AA1 Score	-0.106	**-0.175**[**]	-0.027	-0.090
AA3 Score	-0.181	-0.091	-0.116	-0.158

[**]p < 0.001

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Correlations between Fatigue Scores and Age, Gender and Time Commitments

	Total OFER Score	Chronic Fatigue	Acute Fatigue	Persistent Fatigue
Age	-0.086	-0.043	**-0.139****	-0.048
Gender	0.066	0.017	0.057	0.076
Class	**0.304****	**0.336****	**0.119***	**0.253****
Drive Time to Campus	0.015	0.050	0.001	-0.019
Drive Time to Clinical Experience	**0.155****	**0.178****	0.021	**0.139****
Family Responsibilities	0.084	0.081	0.075	0.055
Paid Employment	-0.102	-0.096	**-0.158****	-0.056

$**p < 0.001$

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Discussion

Results: **Summary**

- What is the degree of fatigue experienced by undergraduate BSN students?

  – Mid-range: mean scores ranged from 49-58 (on a scale of 0-100)

- Does the degree of fatigue differ by placement in the program?

  – Students later in the program have a significantly higher level of fatigue

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Results: **Summary (Cont.)**

- Does the degree of fatigue affect academic performance?

  - Earlier academic performance is inversely related to acute fatigue

- Are other factors (age, gender, time commitments) correlated to fatigue?

  - Drive time is correlated to higher levels of fatigue; employment and age are correlated to lower levels of fatigue

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Limitations

- Single school surveyed

- Self-report of fatigue, based on only one instrument

- Response rate 8.6 percent

- This study is descriptive and does not establish whether fatigue can predict academic achievement and any relationship between academic achievement and fatigue are mediated by work and family commitments

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Discussion

- Like Rella et al. (2009) workload fatigue increased across program progression

- Drive time to and from clinical experiences correlated with increased level of fatigue but not drive time to and from campus

- Surprisingly, students who worked and attended school had less fatigue

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Recommendations and Implications

- Recommendations for Research

  - Repeat with larger number and different programs

  - Investigate characteristics of students at entry, such as resilience and social support

  - Use other measures of fatigue and document hours of sleep

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Recommendations and Implications (Cont.)

- Implications for Educational Practice

  – Help students find alternative funding or employment situations with higher pay to decrease work hours to meet school expenses

  – Incorporate caring and adaptive behaviors into the curriculum

  – Encourage students to use family support

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