

Apr 19th, 3:30 PM - 4:00 PM

## Fighting Fatigue with Caffeine: Exploring Perceptions on Patient Safety

Camille De Guzman Quitangon  
*Dominican University of California*

**Survey: Let us know how this paper benefits you.**

---

Quitangon, Camille De Guzman, "Fighting Fatigue with Caffeine: Exploring Perceptions on Patient Safety" (2018). *Scholarly and Creative Works Conference 2020*. 66.  
<https://scholar.dominican.edu/scw/scw2018/all-conference/66>

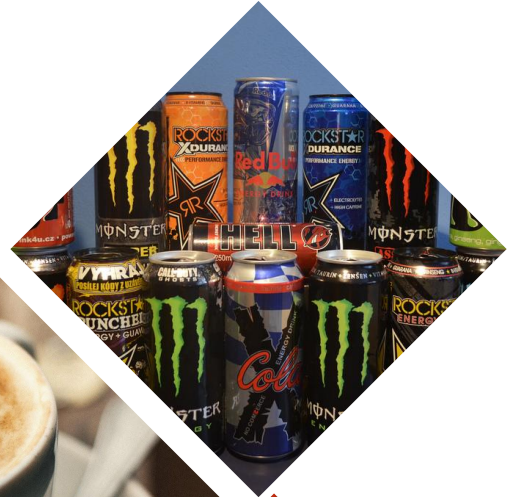
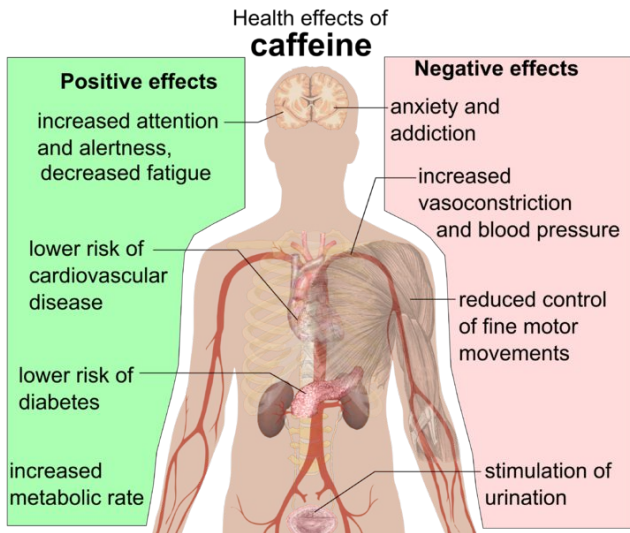
This Event is brought to you for free and open access by the Student Scholarship at Dominican Scholar. It has been accepted for inclusion in Scholarly and Creative Works Conference 2020 by an authorized administrator of Dominican Scholar. For more information, please contact [michael.pujals@dominican.edu](mailto:michael.pujals@dominican.edu).

**Fighting Fatigue With Caffeine:  
Exploring Perceptions on Patient Safety**

**Camille Quitangon**  
Scholarly and Creative Works Conference  
Honors Program  
April 19, 2018  
Guzman 201

# Caffeine Beverages

A substance commonly found in many beverages



# How much caffeine is in our beverages?



# CAFFEINE LEVELS IN MILLIGRAMS





# Fatigue in Nurses

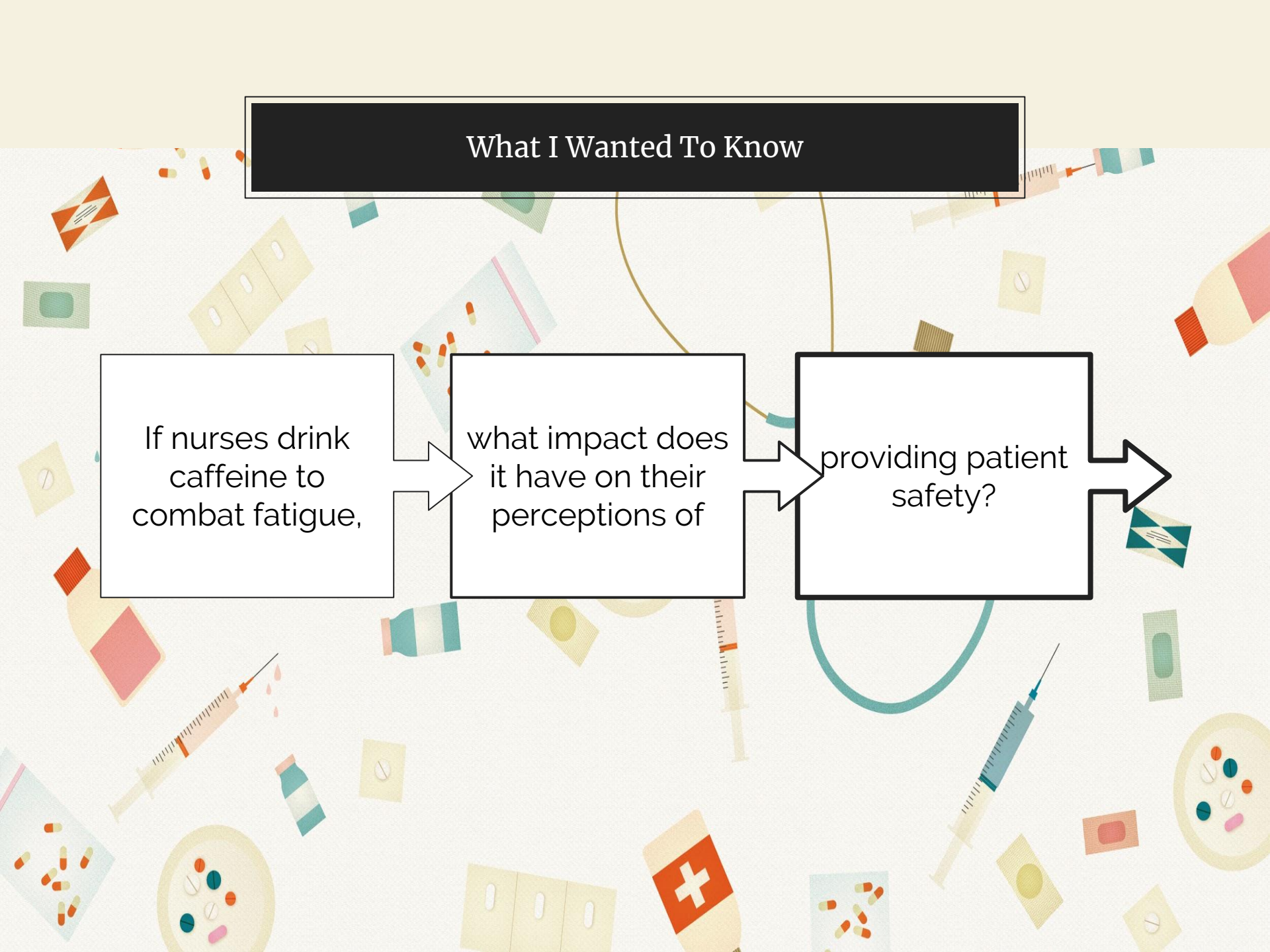


## What I Wanted To Know

If nurses drink  
caffeine to  
combat fatigue,

what impact does  
it have on their  
perceptions of

providing patient  
safety?



*Why is this important  
in nursing?*

*Why does it matter?*



# PATIENT SAFETY

- Prevention of harm to patients
- Nurses' vigilance at the bedside is essential to their ability to ensure patient safety
- Vigilance: the action or state of keeping careful watch for possible danger or difficulties






# REVIEW OF THE LITERATURE



**The Relationship Between  
Fatigue and Patient Safety**



**Caffeine's Effect on Human  
Performance**

# The Relationship Between Fatigue and Patient Safety

## Key Findings



**Likelihood of making an error increased with longer work hours**

(Rogers, Hwang, Scott, Aiken, & Dinges, 2004)



**Half of nursing shifts exceeded 10.5 hours**  
(Rogers, Hwang, Scott, Aiken, & Dinges, 2004)



**Nurses who worked 12+ hours were more likely to report decision regret**  
(Scott, Arslanian-Engoren, & Engoren, 2014)



**Majority of nurses reported moderately high fatigue and significant sleep deprivation**

(Scott, Arslanian-Engoren, & Engoren, 2014)



**Mental fatigue showed a tendency to have negative correlations with performance measures**

(Barker & Nussbaum, 2011)



**Fatigue → increased risk of making mistakes, cutting corners, decrement in fine motor skills**

(Papp, et al., 2004)

# Caffeine's Effect on Human Performance

## Key Findings



**Caffeine improves the performance of alerting and executive control networks, but slightly diminishes orienting network**

(Brunyé, Mahoney, Lieberman, & Taylor, 2010)

- Alerting
- Executive
- Orienting



**Enhances sustained attention and alertness**

(Wilhelmus, et al., 2016)



**Reaction time, vigilance, and logical reasoning was maintained with caffeine supplementation**

(Kamimori, et al., 2014).

## Overview of Literature Review

### Conclusions

- ◉ Many nurses report being fatigued
- ◉ Fatigue impairs nurses' cognitive function
- ◉ Impaired nurses are more likely to report decision regret
- ◉ Caffeine has positive effects on cognitive function
- ◉ Caffeine increases subjective feelings of being more awake and less tired

### Strengths

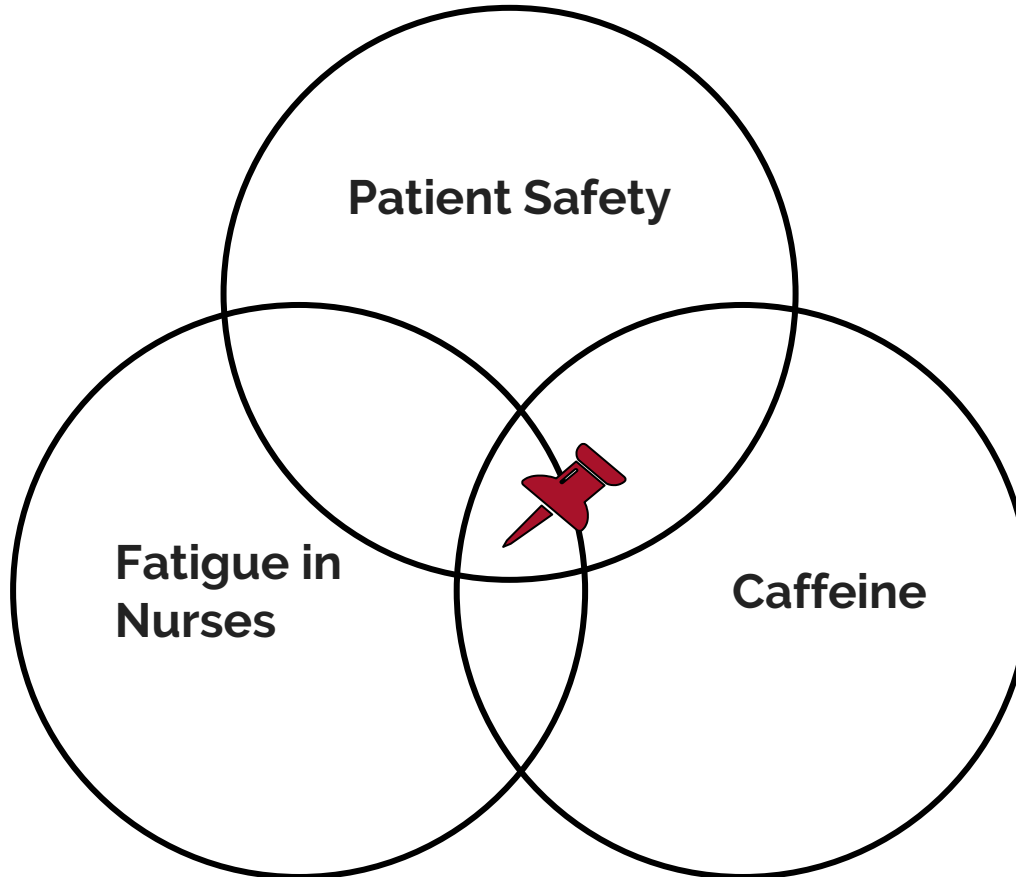
- ◉ Findings support existing research
- ◉ Information was gathered through tested validity and reliable methods

### Limitations

- ◉ Fatigue is a subjective experience, variability in measurement
- ◉ Potential negative effects of caffeine were not looked into
- ◉ Caffeine withdrawal on human performance was not found

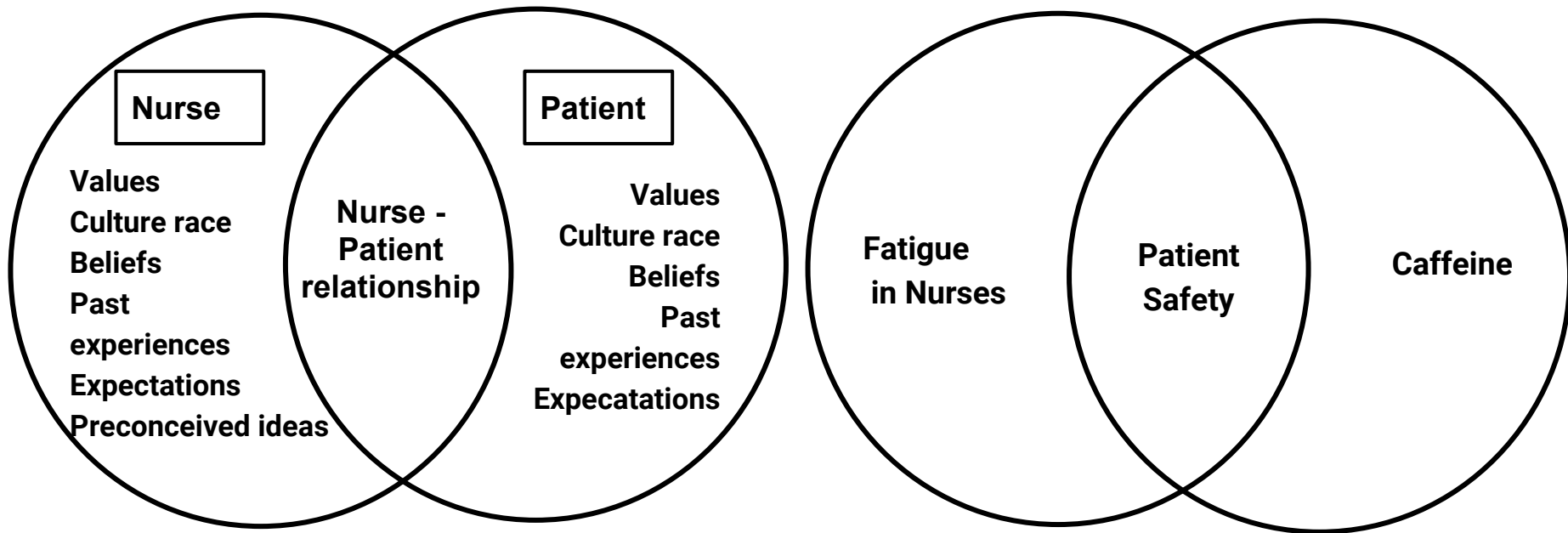


## The Gap



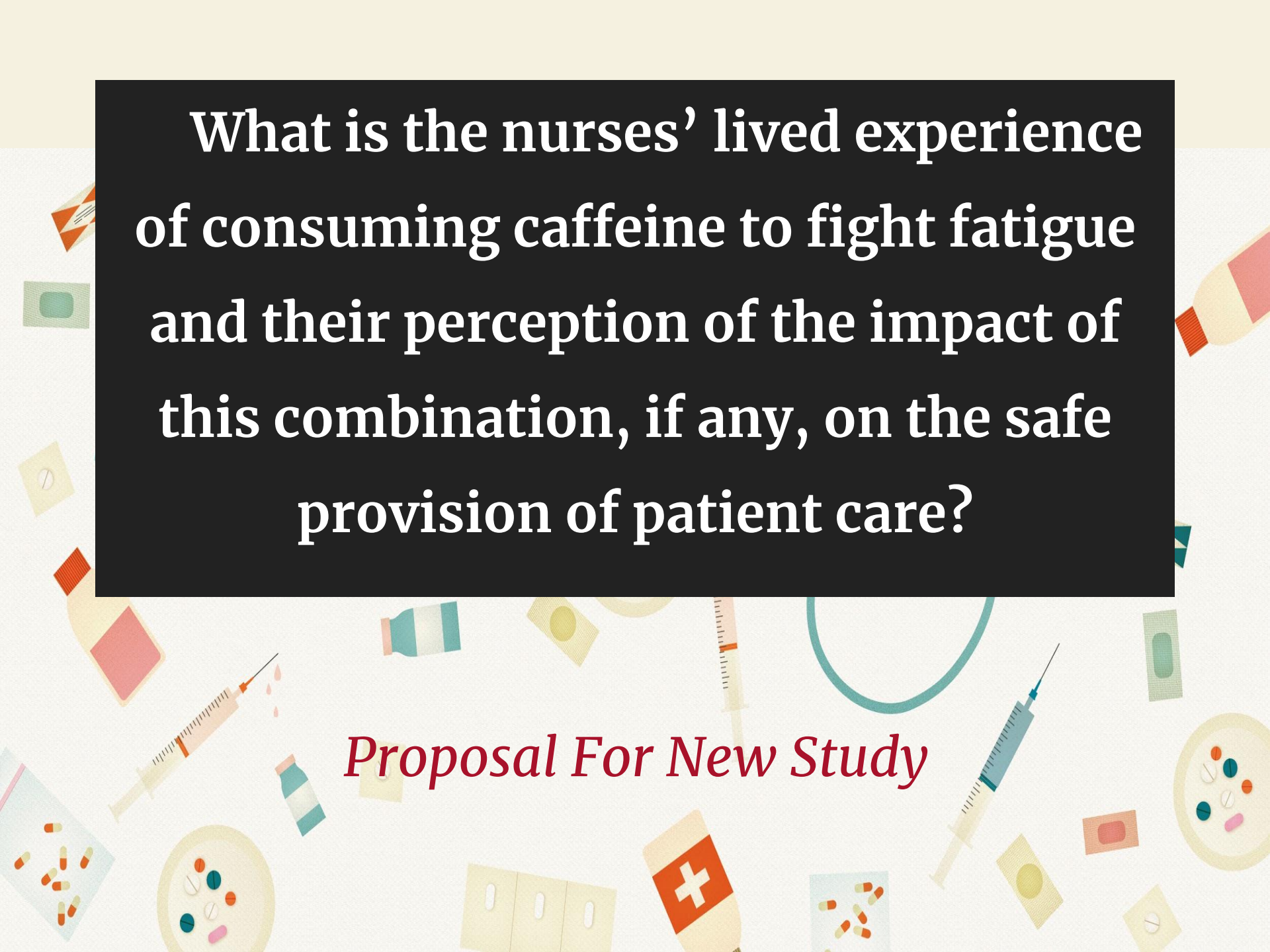
More research is needed to explore the effects of caffeine as a fatigue countermeasure and if it's effective to prevent errors in a healthcare setting.

# Theoretical Framework



Hildegard E. Peplau's  
Theory of Interpersonal  
Relations

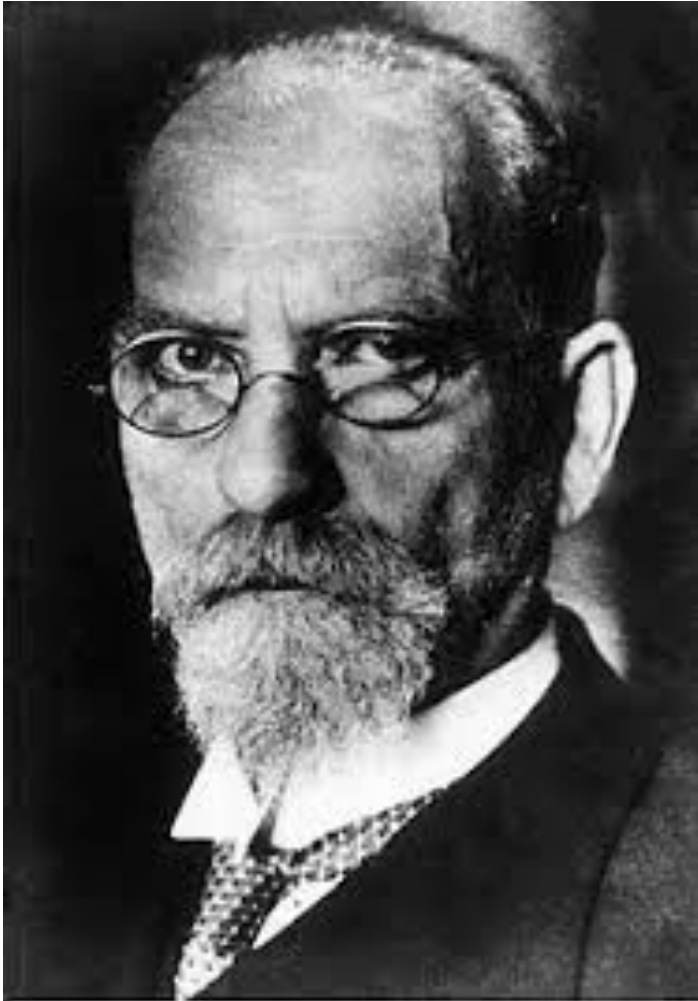
Relationship among  
fatigue by nurses,  
caffeine consumption,  
and patient safety

The background of the slide is a light beige color with a pattern of various medical icons scattered around. These icons include syringes, pills, bandages, a first aid kit, a stethoscope, and other medical supplies. The main text is centered in a large, white, bold font on a black rectangular background.

**What is the nurses' lived experience of consuming caffeine to fight fatigue and their perception of the impact of this combination, if any, on the safe provision of patient care?**

*Proposal For New Study*

## Qualitative, Phenomological Design



Phenomenology –  
Guiding theme is to  
go “back to the  
things themselves”

*Husserl, Edmund  
(1900)*



## The Proposed Study

Approval by Dominican University IRB

Acquire Participants

Informal Interviews

Consent Form

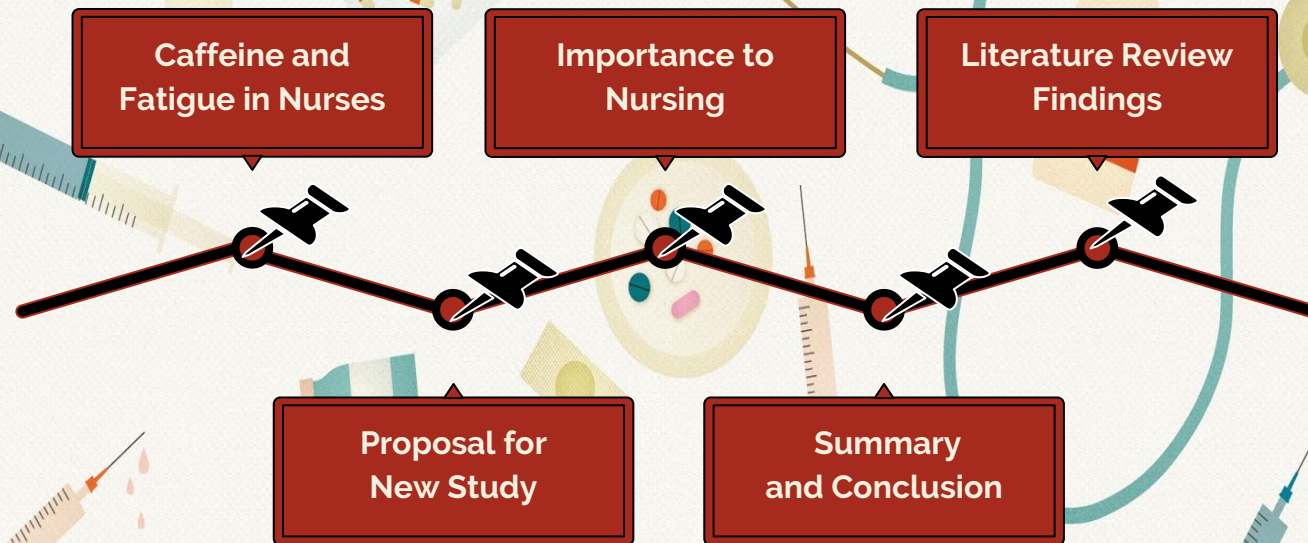
Snowball and  
Convenience Sampling  
Nurses working at  
least 36 hours a week,  
who drink caffeine to  
combat fatigue during  
their shift

Open-ended  
questions  
Recorded and  
Transcribed  
Data Analysis  
Template to  
Decode

## Conclusions

- No direct evidence that caffeine has an impact on patient safety
- Benefits for caffeine consumption
- Fatigue is a problem among nurses
- Fatigue impairs nurses
- More research is needed to explore potential links between caffeine, fatigued nurses, and patient safety
- Caffeine use as a fatigue countermeasure still needs to be examined

# Fighting Fatigue with Caffeine: Exploring Perceptions on Patient Safety



## References

- Barker, L. M., & Nussbaum, M. A. (2011). Fatigue, performance and the work environment: A survey of registered nurses. *Journal of Advanced Nursing*, *67*(6), 1370-1382. doi:10.1111/j.1365-2648.2010.05597.x
- Brunyé, T. T., Mahoney, C. R., Lieberman, H. R., & Taylor, H. A. (2010). Caffeine modulates attention network function. *Brain and Cognition*, *72*(2), 181-188. doi:10.1016/j.bandc.2009.07.013
- Han, K., Trinkoff, A. M., & Geiger-Brown, J. (2014). Factors Associated with Work-Related Fatigue and Recovery in Hospital Nurses Working 12-Hour Shifts. *Workplace Health & Safety*, *62*(10), 409-414. doi:10.3928/21650799-20140826-01
- Kamimori, G. H., McLellan, T. M., Tate, C. M., Voss, D. M., Niro, P., & Lieberman, H. R. (2014). Caffeine improves reaction time, vigilance and logical reasoning during extended periods with restricted opportunities for sleep. *Psychopharmacology*, *232*(12), 2031-2042. doi:10.1007/s00213-014-3834-5
- Kunert, K., King, M., & Kolkhorst, F. (2007). Fatigue and sleep quality in nurses. *Journal Of Psychosocial Nursing & Mental Health Services*, *45*(8), 30-37.
- Papp, K. K., Stoller, E. P., Sage, P., Aikens, J. E., Owens, J., Avidan, A., . . . Strohl, K. P. (2004). The Effects of Sleep Loss and Fatigue on Resident-Physicians: A Multi-Institutional, Mixed-Method Study. *Academic Medicine*, *79*(5), 394-406. doi:10.1097/00001888-200405000-00007
- Rogers, A. E., Hwang, W., Scott, L. D., Aiken, L. H., & Dinges, D. F. (2004). The Working Hours Of Hospital Staff Nurses And Patient Safety. *Health Affairs*, *23*(4), 202-212. doi:10.1377/hlthaff.23.4.202
- Scott, L. D., Arslanian-Engoren, C., & Engoren, M. C. (2014). Association of Sleep and Fatigue With Decision Regret Among Critical Care Nurses. *American Journal of Critical Care*, *23*(1), 13-23. doi:10.4037/ajcc2014191
- Wilhelmus, M. M., Hay, J. L., Zuiker, R. G., Okkerse, P., Perdrieu, C., Sauser, J., . . . Silber, B. Y. (2016). Effects of a single, oral 60 mg caffeine dose on attention in healthy adult subjects. *Journal of Psychopharmacology*, *31*(2), 222-232. doi:10.1177/0269881116668593



**Thank you!**

**ANY QUESTIONS?**

