Doctor of Nursing Practice Final Manuscripts   **Theses and Dissertations**

Improving Nursing Student Retention: Early Identification of Determinants Causing Attrition in Nursing Academic Programs

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Improving Nursing Student Retention: Early Identification of Determinants Causing Attrition in
Nursing Academic Programs

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Abstract

Introduction: Student success in higher education is a vital focus for the health of a community and the improvement of an individual's life. It is equally detrimental if a student leaves an educational program without a degree. The purpose of this project was to improve the early identification of students at risk of attrition in a nursing program by using an electronic dashboard interfaced with a self-reporting student survey to identify determinants that are statistically significant factors for student attrition. **Background:** The current accreditation benchmark for nursing program completion is 70% for Bachelor of Science in Nursing degrees. Concordia St. Paul University (CSP) College of Nursing had a completion rate of 82.2% in 2021 and 76% in 2022. There is statistical evidence that gender, location of birth, English as the primary language at home, and race/ethnicity are associated with completion of a nursing degree. CSP is dedicated to bettering the lives of students through earlier identification of attrition risk and assisting in the fulfillment of academic goals. **Methods:** Using Jeffery's nursing universal retention and success model and the Iowa model of evidence-based practice to promote quality care (IMEBPPQ) for project implementation, I created a framework and guiding principles for the project. Upon entry into the Accelerated Bachelor of Science Nursing (ABSN) program at CSP, students reported demographic data using a survey that interfaced with a privacy-protected electronic dashboard. Seven factors and determinants were determined to be supported by quality research and tracked by the College of Nursing leadership team. **Results:** Out of 110 students who entered the program in the spring semester of 2023, 47 filled out the self-report survey. The response rate was 50% for the Oregon nursing program and 23% for the Minnesota nursing program. Of the 47 students, 85.1% were doing their nursing program in Oregon and 14.9% were doing their nursing program in Minnesota; both programs are offered through CSP. The

following, identified with an asterisk, are nonmodifiable factors that could impact the successful completion of the nursing program and self-reported by nursing students in the ABSN program ($n = 47$): 21.3% male*; 78.7% female; 25.5% with no previous diploma or degree*; 17% born outside of the United States*; 29.8% with parents born outside of the United States; 12% with English not the primary language in the home*; 17% Hispanic or Latino*, 17% Asian*, 6.4% Black/African American*, and 76.6% White. **Evaluation:** The project was successful at capturing data that can influence program completion at CSP. By using the self-report survey, administrators were able to identify 17 of the nursing students admitted in the spring semester of 2023 who had two or more risk factors for attrition. These 17 students, or 15% of the newly admitted cohort, were not identified as at risk when entering the nursing program with current academic alert criteria in place.

Keywords: nursing student attrition, determinants of attrition, higher education

Improving Nursing Student Retention: Early Identification of Determinants Causing

Attrition in Nursing Academic Programs

There have been many shifts in nursing education and a need for a healthy academic sector to deliver new nurses into the community. Even with ongoing changes to nursing essentials, competency-based education, nurse faculty shortages, and nursing being labeled as one of the toughest degrees to obtain, nursing students continue to fight for a spot in any nursing program that will let them in. When looking at the main areas to seek improvement, the focus should first be on decreasing course failure rates (i.e., out-of-progression status), improving the financial stability of the nursing program, and improving student success for those from diverse backgrounds.

Background and Significance

There have been recent attempts at the national nursing level to fight health inequity and structural racism, and as Hassmiller and Wakefield (2022) stated, "nurse leaders have a responsibility to address structural racism" (p. 296). Beard and Sanderson (2022) described the many levels of action taken by the American Association of Colleges of Nurses (AACN) and the National League of Nursing to fight for health equity and equitable access to education: "equitable education does not exist in the United States. Students most negatively impacted are growing in number and represent our nation's most racially and ethnically diverse individuals" (p. 12). Improving equitable education in nursing would lead to more action in vulnerable communities to bridge the health equity gap. Recent research has shown disparities in healthcare delivery to those who identify as a minority. Access to care, insurance coverage, and lower quality of care are some examples of barriers those from diverse backgrounds may encounter in their pursuit of healthy living (Hassmiller & Wakefield, 2022). In addition to improving

diversity, equity, and inclusion (DEI), the nursing workforce is experiencing unprecedented challenges in meeting the demand for care delivery in all patient populations and being able to educate those pursuing a nursing career.

Auerbach et al. (2022) found the nursing workforce decreased by 100,000 between 2021 and 2022, a drop that has not been seen in the last 40 years when looking at growth in the nursing profession. According to the American Nurses Association (ANA, 2020), "[The] Health Resources and Services Administration found that the average age for an RN is 50 years old, which may signal a large wave over the next 15 years" (p. 2). One approach to improving this shortage is to increase enrollment in nursing programs and improve academic attrition rates.

AACN published a report in 2021 on nursing student enrollment for the 2020–2021 academic year. Although their findings showed an increase in enrollment numbers, close to 80,000 nursing applicants across all academic nursing degrees met admissions criteria but were turned away due to several factors; this number does not include those declined due to not meeting admission criteria (AACN, 2021). This data shows the importance of closely monitoring attrition rates of nursing students to retain students admitted into a nursing program, in hopes of relieving nursing shortages to support our health care needs. In addition to supporting our healthcare infrastructure, it is vital to support our nursing students and their investments. This data also poses a risk to the financial health of academic institutions. When there are not enough resources and the agility to move with the demand for the educational product, institutions could suffer losses.

Seltzer (2022) highlighted data from the 2023 Moody's Investor Service report and quoted Emily Wadhwani, Fitch senior director, who stated, "U.S. higher education institutions will continue to struggle with inflationary costs, labor pressures, mixed enrollment trends and a

continued need for elevated expenditure controls" (para. 8). The data also showed that smaller universities, or those with fewer than 5,000 students, were at higher financial risk, which could lead to bankruptcy or the required acquisition/merger. Nationally in 2021, there was a 3.3% increase in applicants admitted to entry-level nursing programs in the United States (AACN, 2021).

It is to the greater benefit of communities and the nation to pursue processes and systems that set college students up to successfully complete an academic program. Individuals from many ethnic, cultural, and socioeconomic backgrounds (e.g., resource-rich or resource-poor) are actively engaging in education. Not every student begins from the same starting line in the race to complete an academic program. In addition to student success, it is imperative for higher education institutions to implement processes to help with the early identification of at-risk students and promote sustained financial growth and organizational success.

Purpose

Being able to serve nursing students and understand stressors, social determinants, and how to continue to increase student persistence and retention will benefit all nursing programs, the communities served, and the nursing workforce. It is to the benefit of not only the individual but the greater good to support admitted nursing students in an educational program through the completion of a degree. To do this, the College of Nursing at Concordia St. Paul University needs infrastructure to identify students with the determinants proven by evidence to lead to higher risk of attrition.

This paper highlights an evidence-based practice project to better identify at-risk students at the College of Nursing and improve student retention by decreasing failure rates, especially in the first semester of the program. The project will identify at-risk students through their self-

reporting of determinants shown to increase the risk of attrition in higher education. The aim was to increase student success in an accelerated baccalaureate science degree in nursing (ABSN), improve DEI in the nursing workforce, decrease the nursing workforce shortage, and continue improving the financial health of Concordia St. Paul University as long-term goals in the alignment of university mission and values.

Evidence for Problem

Attrition is measurement of students who do not finish a degree program. Retention rates describe those who finish a degree program and are commonly marketed to show the success of a program and entice potential students to choose one university's program over another. Many factors can lead to the unsuccessful completion of a program or degree, but to understand the impact on a community, students, and economics, it is imperative to look at data.

Numerous studies over the years have researched the return on investment for finishing higher education. Some of these studies have examined increased or higher pay leading to improved career and social satisfaction, decreasing debt, having increased money to pay student debt, and improvement of social determinants (Jüttler, 2020). According to Stein (2018), the U.S. government, which continues to encourage higher education to improve economic driving forces, needs to look at fixing the larger issue of attrition and retention (Stein, 2018). Approximately 36 million students are labeled as having "some college, no degree (SCND)" status and "adults who are both out of school and have [SCND] account for up to 11.0% of the national population" (Hanson, 2022, Report Highlights section).

Concordia St. Paul University (CSP), located in St. Paul, Minnesota, is a Lutheran university founded in 1893 by the Lutheran Church Missouri Synod (LCMS). It is a comprehensive liberal arts college serving about 5,000 students from 20 different countries and

in over 80 different programs. The university's athletes compete in Division II. The university's mission statement "is to prepare students for thoughtful and informed living, for dedicated service to God and humanity, for enlightened care of God's creation, all within the context of the Christian Gospel" (CSP, 2020, Mission section. Their vision states they will be "an exemplary, academically respected, Christ-centered, nationally prominent Lutheran university known for excellence and innovation that fosters success for all students" (CSP, 2020, Vision section). The College of Nursing is one of the largest departments of the university.

Like all universities, there is room for potential financial growth and savings when tackling retention barriers. CSP has an opportunity to increase revenue or stabilize forecasted budgets with improved early detection of students at risk for attrition. It can be safely assumed all candidates accepted into a nursing program need to be successful in program and course completion to prevent a loss of potential revenue that could impact the budget. Nursing programs need to look at their potential students as a large factor in the revenue health. All admitted students are potential financial gains and/or losses for that school of nursing. For a student who fails out in any given semester, the school of nursing could see a loss of revenue for the rest of that student's potential program life cycle.

CSP's College of Nursing has nearly 550 students at any given time during rolling admissions into the program. CSP enrolls nearly 100–120 nursing students each semester in the ABSN program, making up much of the student body in Portland, OR, and St. Paul, MN. According to Dr. Caldwell, dean of the College of Nursing, 476 students were admitted and 376 students graduated in 2020-2021 academic year (see Table 1 and 2), for a graduation rate of around 82% (personal communication, 10/01/2022. Twenty students were excluded from this calculation and did not fall into the definition of attrition. Dr. Caldwell confirmed the cost per

semester for the accelerated nursing program is close to $17,000, with four total semesters in the program.

Regarding potential revenue loss for CSP, if students who drop from the program lose two semesters due to academic reasons, a conservative calculation yields a loss of $17,000 per student for a total of $1.7 million for the 100 students in 2021 who did not progress in the program. These costs are planned and forecasted funds in the budget not gained due to the unplanned exit of students due to academic failure. Prevention of attrition can have a major impact on students' lives and the financial growth of the university. Revenue loss is only one aspect, however; the other is being able to optimize admission numbers. Currently, about 85 nursing student applicants are waiting to start the program. These students are qualified and have been granted admission but are waiting for the next semester to begin due to limited space capacity.

Table 1

CSP 3-Year Completion Rate Summary

CSP CON Program Completion Rates

Completion Rates 3 year Summary

Track	2020	2021	2022	Discussion
RN-BSN	(39 of 41) 95.1%	(14 of 16) 87.5%	(3 of 5) 60%	Contributing factors - merger of schools, COVID requiring more bedside nurses; national decline; changed education providers with less recruiting; 2 students not completed in 2022 are still in Gen Ed but out of sequence. Program paused in 1/2023. No current action plan.
Trad	(29 of 33) 87.8%	(15 0f 18) 83.3%	(14 of 16) 87.5%	n/a
MN ABSN	n/a	n/a	(17 of 21) 80.5%	n/a
OR ABSN	n/a	(347 of 422) 82.2%	(177 of 231) 76%	SP21 results contributors - small group, COVID, teach out of old and starting new curriculum; "majority of academic alerts were admitted under petition. F21 - 15 of 22 students in academic progression were admitted under petition; questions on students in progression working full time

Table 2

CSP Completion Rate Data

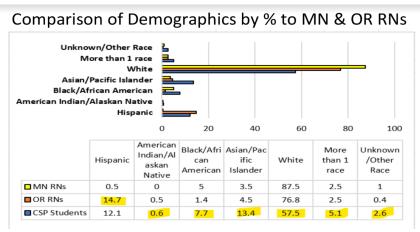| Calendar Year of Graduation	Calendar Year of Admission	# Students Admitted	# Students Excluded	# Students Completing	% Students Completing
2022	2020-2021	275	5	211	78%
2021	2019-2020**	476	20	376	82%
2020	2018-2020*	334	20	302	96%
2019	2017-2018	97	13	67	80%
2018	2016-2017	53	10	38	88%
2017	2015-2016	41	10	22	71%
2016	2015	30	12	15	83%

Data is based on the cohorts who were scheduled to graduate in a given calendar year using a 16-month time to completion for ABSN, 24-month for RN-BSN, and 30-month for Pre-Licensure

Because the completion rates are calculated based on a 24-month timeframe, the year of admission for those cohorts does not align exactly with a calendar year.

Additional cohorts admitted in those years are not included if the cohort has not yet reached 24-months since admission.

*Includes 2 ABSN cohorts admitted in summer 2020 (114 students in semester 4 and 126 students in semester 3)

**Includes 2 ABSN cohorts admitted in summer 2020 in semester 2 (124 students)

The current demographics of the CSP nursing program show improvement and match the community of the nursing workforce. This is progress, but improvement is still needed to match the communities they serve. Continued efforts in all these sectors will align with the mission and vision of the university.

Figure 1

CSP Student Nurse Demographics to Nursing Workforce

	Hispanic	American Indian/Alaskan Native	Black/African American	Asian/Pacific Islander	White	More than 1 race	Unknown/Other Race
MN RNs	0.5	0	5	3.5	87.5	2.5	1
OR RNs	14.7	0.5	1.4	4.5	76.8	2.5	0.4
CSP Students	12.1	0.6	7.7	13.4	57.5	5.1	2.6

2020 data from MN and OR Boards of Nursing

Literature Review

Given the focal point of using an electronic dashboard to improve early identification of students at risk for attrition, this project's intervention was to identify the determinants of risk and then the ability to capture them electronically on a dashboard. Barbe et al. (2017) used Jeffreys's nurse undergraduate retention and success (NURS) model and the geometric model of student persistence and achievement in a descriptive comparative design study. This study concluded a number of nonmodifiable factors and determinants are statistically significant for student attrition from a nursing program: demographics and diversity, place of birth, parents' place of birth, the primary language spoken in the home, and the ability to purchase books in the first semester. An interesting finding was there was no statistical significance for attrition when looking at traditional admission criteria such as GPA, science GPA, and the Test Essentials of Academic Skills (TEAS) score (Barbé et al., 2018). Some limitations of the study included a sample size of 164 in one geographical area in the southeastern United States and no randomization of the cohort nor a control group in the study.

Caponnetto et al. (2021) carried out a retrospective 40-year systematic review and meta-analysis on student nursing outcomes and influencing factors. The factors reviewed included: language spoken (i.e., native in the school location), gender (i.e., male/female), age, secondary school grades, education type, work experience in nursing, and travel time to the university. After reviewing all research that was observational in nature, focused on undergraduate nursing programs, and lasting three years in length, and after filtering out all studies with publication bias, the researchers concluded that gender (female) and higher secondary school grades were influential in the successful completion of nursing programs. One limitation was that many

variables were not addressed in this meta-analysis and review due to the limited number of studies conducted on them (Caponnetto et al., 2021).

One study centered on first-semester success in nursing programs and concluded that cumulative GPA was statistically significant in students' success in pathopharmacology, health assessment, foundations, and fundamental courses. Gartrell et al. (2020) focused on preadmission predictors for success in the first semester of nursing using a retrospective descriptive design at a mid-Atlantic university from 2013 to 2018. Because more CSP students fail in the first semester than other semesters, which leads them to be out of progression in the nursing program, this research study was considered in keeping the admission criteria (Gartrell et al., 2020).

Table 3

Major Studies Used: Summarized Literature Review and Evaluation Table

Citation: (i.e., author(s), date of publication, & title)	Purpose of Study	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables Studied and Definitions	Measurement of Major Variables	Data Analysis	Findings	Strength of Evidence Worth to Practice
Barbé, T., Kimble, L., Bellury, L., Rubenstein, C., 2017, Predicting student attrition using social determinants: Implications for a diverse nursing workforce	The purpose of this study was to identify demographic, academic, and social determinant factors associated with attrition at the end of the first semester in an upper-division baccalaureate nursing program.	Jefferys Model of Nursing Undergraduate Retention and Success (NURS) And Geometric Model of Student Persistence and Achievement	The study had a descriptive, comparative design. A convenience sample was obtained Quantitative Analysis	$n = 164$ An upper-division baccalaureate nursing program in the Southeast.	IV: Demographics IV: Academic Social Determinants DV: Progressed or Not Progressed	IV: Demographics: Age, Gender, Race/Ethnicity (dichotomy of Ethnicity included nondiverse and diverse (Black, Asian, Hispanic/Latino, and American Indian/Alaska Native)). IV: Academic: Overall GPA, Science GPA, TEAS score, Confidence to complete academic tasks, Final Grade in each course Social Determinants: Economic Stability, education (English primary language, HS Prep, First gen HE), Social and community context (born outside of US, parents born outside US, Experiences of discrimination in ed settings, Support from family	Chi-square test for independence between progression and all prior variables test	Demographic: Statistically significant of progression and diversity ($X2 = 10.09$, $p = 0.002$) Social Community Context: Statistically Significant for being born outside of US ($x2 = 4.90$, $p = 0.043$), parents born outside of US ($X2 = 20.62$, $p = 0.001$), and English primary language spoken in home ($X2 = 13.26$, $p = 0.001$): Note, 80% of the group who failed reported one or both parents were born outside of US compared to 23.4% of the group who were successful.	Level IV: Risk: None Worth to Practice: Yes, although the research was limited in sample size, and controlled for one cohort group, there was statistically evidence in areas that were demonstrated to be a determinant to success in higher education Strength: Research study looked at different types of determinants, such as demographics, socioeconomic, and perception of success by student. Other areas that were reviewed were traditional requirements of program admission requirements such as TEAS, GPA,

| | | | | | | | members and friends), Health and Health Care (Self reported physical health, mental health, perceived stress, self esteem),Neighborhood and Environment (Personal Safety, availability of housing)

DV: Progression: Passed 4th semester of nursing courses

Not Progressed: Failed one or more classes in 4th semester of nursing course | | Mann U Test to determine significance of the following:

Students who failed the first semester reported significantly more restriction in their ability to purchase or obtain required textbooks for nursing school compared to students who successfully completed all courses (U = 537,p = 0.009).

Students who failed the first semester reported significantly more restriction in their ability to purchase or obtain required electronics for nursing school compared to students who successfully completed all courses (U = 489.5, p = 0.003).

Students who failed the first semester reported significantly | and Science GPA

Weakness: Study was contained to a smaller geographic area, did not have randomization or control.

Feasibility: This study is feasible to consider for other nursing programs in determining how to funnel resources to those students at higher risk. |

								more restriction in their ability to complete the amount of reading required within the nursing program compared to students who successfully completed all courses (U = 624, p = 0.036). No statistically significant difference between total self-esteem scale scores and progression status was found using an independent-samples t-test. There was no statistically significance (through t-tests) in age, TEAS score, overall GPA and science GPA.	
Caponnetto, V., Dante, A., Vittorio, M., La Cerra, C., Petrucci, C., Alfes, C., Lancia., L., 2021, Detailed data about a 40-year systemic review and meta-analysis on nursing student outcomes	Systematic review with meta-analysis, looking for significance of factors to academic success of nursing students	No theory was mentioned Meta-Analysis	Systematic Review/Meta-Analysis Studies included in the meta-analysis had to be quantitative, non RCT in design	N = 18 studies in total (n = 10 retrospective, n = 7 prospective, n = 1 case control) n = 9 studies included in meta-	DV: Native Language Speaker, Gender (male/female), Age, Higher Secondary School Grades, Education Type, Previous Work Experience in Nursing, Travel Time to University, Working While in Nursing School, Weekly hours of	DV: To be included in the review, studies had to be observational in nature; students from an undergraduate nursing program that lasted 3 years IV: all measures of success and lack of success at the end of regular duration of	SPSS used for the PRISMA flowchart of the whole selection. Subgroup #1: meta-analysis comparing language, gender, age, and	The following were to be statistically significant after sensitivity analysis of the meta-analysis was completed with removing risk for publication bias. Female Gender: Statistically	Level of Evidence: 1 Risk/Harm: None Worth to Practice: Yes, this systematic review of research done over 40 years is valuable in deciphering what variables could impact successful

				analysis after assessment for bias with Downs and Black instrument	work while attending nursing program, Students used to volunteer while attending the nursing program, Experienced Life Events, Experience with Economic Hardship, Faced Family Commitments While Attending the Nursing Program DV: Academic Success, Lack of Academic Success	program	secondary school grades Subgroup #2: Sensitivity analysis of subgroup #1 Sensitivity analysis for meta-analysis comparing type of education/school attended, working experience in the field before the nursing program, time to reach campus, and working while attending the nursing program. Funnel plots used to look at publication bias for study comparing all DV.	Significant in Success Outcome Higher Secondary School Grades: Statistically Significant in Success Outcomes	completion of a nursing program. Strengths: Systematic Review with meta-analysis. This review contained factors that could impact nursing student success in an undergraduate program. It also helps determine what variables are not determinants to unsuccessful completion. Weaknesses: Study did not address all variables that could impact retention in a nursing academic program, such as immigration status, language spoken at home, race or ethnicity.
Gartrell, K., Kent, Vicky., Rock, M., Williams-Cooper, K., Curran, M., Durry, A., Necker, B., Armstrong, L.,	To examine which preadmission factors predict students'	None Described Quantitative Study	Retrospective Descriptive Design	Nursing program at a public University in the mid-Atlantic	DV: Course grades in Pathopharmacology, Health Assessment, Foundations, HESI and KAPLAN tests.	DV: Successful completion of the dependent variables was a passing score of 72% or higher, collection of sample	Descriptive analysis: Used for preadmission characteristi	Statistical significance level reported at p < 0.05 Preadmission	Level of Evidence: III Retrospective Control Study looking for risk

| Mark H., 2020, Preadmission predictors for first semester course success in a baccalaureate nursing program | success in the first semester of a baccalaureate nursing program | | | region

Length: 2013-2018

n = 927 students | Passing score of 72% higher

IV: Preadmission overall GPA, Prerequisite science GPA, and TEAS composite scores

Confounding Variables: identified on bivariate analysis, controlled for in multiple linear regression and logistic regression analysis | was finite between those admitted between 2013-2018.

IV: Overall GPA was scored 0-4, prerequisite science GPA was calculated by the average of the three highest course GPAs of anatomy and physiology, biology, chemistry, or microbiology and scored 0-4. TEAS was calculated by averaging the scores with points 0-100. | cs

Chi-square tests: difference in first semester course success and admission criteria

T-tests: Examine differences in first semester HESI/KAPLAN test scores by admission criteria | Cumulative GPA (OR = 3.82, 95% CI = 1.43-10.16) and prerequisite science GPA (OR = 2.57, 95% CI = 1.14-5.78) predicted success in pathopharmacology course

Preadmission Overall GPA (OR=6.53, 95% CI = 1.59-26.85) and TEAS Score (OR=1.15, 95% CI = 1.09-1.22) predicted success in the health assessment course

Preadmission Overall GPA (OR = 3.42, 95% CI - 1.18-9.92) and TEAS score (OR = 1.05, 95% CI = 1.01-1.10) predicted success in the foundation course.

Higher preadmission cumulative GPA (B = 14.19, p <0.01), prerequisite science GPA (B = 12.62, p < 0.01) and TEAS composite score | factors

Risk: None

Worth to Practice: Yes, there is significant evidence, as supported with this, that shows overall GPA, science GPA, and TEAS scores does have correlation to higher education success.

Strength: Sample size is good, population is same as the one studied, more evidence showcasing the correlation between the dependent and independent variables.

Weakness: Sample was located in one geographical area. Meta-analysis was not done, and potential risk of publication bias.

Feasibility: Currently already in the process of looking at prospective students upon entering into the program. This can be easily implemented into the new electronic |

								(B = 0.48, p < 0.01) predicted a higher pathopharmacology KAPLAN test score Higher preadmission cumulative GPA (B=62.52,p < 0.01), prerequisite science GPA (B=61.18, p < 0.01), and TEAS composite score (B=4.76, p <0.01) predicted higher fundamentals-HESI test scores	dashboard.

Using evidence that highlights factors impacting nursing student success in an undergraduate nursing program can identify students at higher risk of attrition. Determinants shown to impact academic performance can be labeled academic in nature, such as cumulative GPA, cumulative science GPA, and the Test of Essential Academic Skills (TEAS) scores. Other determinants shown to impact academic performance in nursing education are demographic and social or community in nature. Demographics include gender and race and ethnicity; in some research studies, age also was included as significant. Social and community factors include the primary language spoken at home by students or parents. Other studies looked at factors such as the ability to buy textbooks and access to the internet and computers, but these, along with age, were excluded due to either strength or conflicting evidence.

Barbé et al. (2018) identified determinants associated with attrition at the end of the first semester of a baccalaureate nursing program. NURS was used as the foundational support of the research. Findings from the research indicated there was a statistically significant relationship between students' going out-of-progression and diversity (X2 = 10.09, p = 0.002). Social community factors also played a part of course failure. Being born outside of the United States, having parents born outside of the United States, and English as a primary language spoken in home all had an impact on course failure and program completion (Barbé et al., 2018).

Gender has also been identified as a nonmodifiable determinant of success in a nursing program. Through the systematic review and meta-analysis of 18 quantitative descriptive studies, being female was identified as favorable for successfully completing an undergraduate nursing program (Caponnetto et. al, 2021). The social or community factors found to be statistically significant for attrition risk include being born outside of the United States, having parents born outside of the United States, and English not being the primary language in the home if parents

were not born in the US (Barbé et al., 2018). By tracking these risk factors, academic leadership can funnel resources to these students prior to their experiencing failure.

Evidence also suggests academic factors also impact attrition risk. Gartrell et al. (2020) examined preadmission criteria that predict success in first semester in nursing school. Cumulative GPA, science GPA, and TEAS scores predicted success in pathopharmcology courses.

PICO Question

Some questions remain as to why students are unsuccessful academically, but there have been some insights into the recent research on attrition rates. This project's scope will be to improve the ability to identify students who are at risk of attrition by self-reporting determinants that could impact higher education learning, and therefore my PICOT question is: For nursing students who are admitted into Concordia St. Paul College of Nursing ABSN Program, does an electronic dashboard of select determinants, compared to without the dashboard, improve the ability to identify nursing students who could be at risk for attrition in higher education within 5 months?

Evidence-Based Intervention

After review of the evidence, the intervention will be to design and implement an electronic dashboard that entails cumulative GPA, Science GPA, TEAS, gender, identification if student and/or parents were born outside of the US, race, ethnicity and if English was spoken at home if racially diverse. Academic factors, already compiled by the admission team, will be added to the dashboard after the student survey is completed. The Smartsheet platform was selected for ease of use and is already utilized by Concordia University St. Paul as part of their information technology applications. This student data will be self-reported though a Smartsheet

survey and will include automation and logic for notification to stakeholders for action if required.
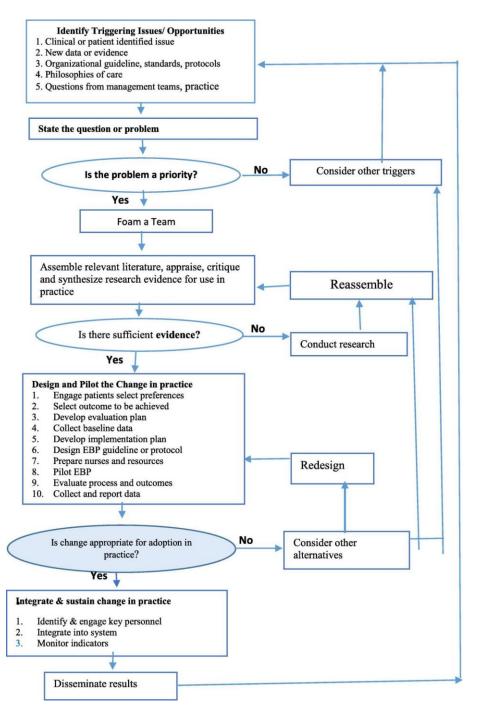
Evidence-Based Practice Model and Theory

For this process change, the Iowa model of evidence-based practice to promote quality care (IMEBPPQ) will be utilized and followed from problem identification to dissemination. This was selected as the evidence-based practice model (EBP) due to the focus on a problem-solving approach. The Iowa model of EBP will be utilized to improve the ability, via a self-reporting tool, to identify students who are at risk of attrition in the nursing program at Concordia St. Paul University. This model utilizes a "pragmatic multiphase change process with feedback loops" (Melnyk & Fineout-Overhold, 2015, p. 283). It will be good for finding solutions to problems during the scientific process, and also for its "applicability and ease of use" since the process of admission into a nursing program includes nurses, the admission team, and administration personnel (Melnyk & Fineout-Overhold, 2015, p. 283).

Figure 2

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

Note. Permission to use image was requested and granted by University of Iowa Hospitals and Clinics.

The phases of the Iowa model will include and be discussed in detail:

Step 1: Identifying Triggers: Where is the opportunity or problem? Is this an identified issue, a new initiative, new evidence or data, new philosophy of care (in this case in academic environments), or is it a new requirement/regulation?

Step 2: Clinical/Practice Applications: The main question in this step is what is the issue being addressed? This does not have to be clinical in nature, even if that is the more widely used type. Administrators can help the inquiry process, in the selection of the issue, by supporting evidence-based delivery in many different realms (Melnyk & Fineout-Overholt, 2015).

Step 3: Organizational Priorities: Gaining support for the EBP project is critical for the facilitation of change/improvement. Being able to align your EBP project with organization priorities will "facilitate garnering" this support (Melnyk & Fineout-Overholt, 2015, p. 285).

Step 4: Forming a Team: Forming a team will occur after approval for the EBP project. Once approval is granted, the team will need to be comprised of a mix of skilled professionals that can represent different departments or levels within a department. It is important to have this mix to "maximize the use of team members skills and organizational linkages" (Melnyk & Fineout-Overholt, 2015, p. 285). It is also critical that each team member will have a role in the project to drive acceptance and influence upon dissemination.

Step 5: Piloting a Practice/Process Change: This step is critical for implementation of a new practice or process to be as seamless as possible. This does not mean it is duplicative of an evaluation phase, but more of a supportive phase to implementation. This step also involves a protocol guideline in an effort to create a roadmap of roles/responsibilities, actions, and decision

points. This phase will also outline "planning and selection of effective implementation strategies" (Melnyk & Fineout-Overholt, 2015, p. 286).

Step 6: Evaluating the Pilot: Depending on the success of the pilot, the implementation strategies and decision on whether the project is viable to insertion into practice or process. This will be a decision point if the project needs modification or ready for rollout into practice. Leadership will be an approving body to integrate into practice (Melnyk & Fineout-Overholt, 2015, p. 286).

Step 7: Evaluating Practice Changes and Dissemination of Results: Monitoring, evaluation, and reporting is critical to "promote the integration of the practice into process changes" (Melnyk & Fineout-Overholt, 2015, p. 286). This will help with adoption as it will allow to a feedback loop for needed changes or validation of it working. This process of evaluation will ensure knowledge and professional development, creating the desire for additional EBP projects within the organization.
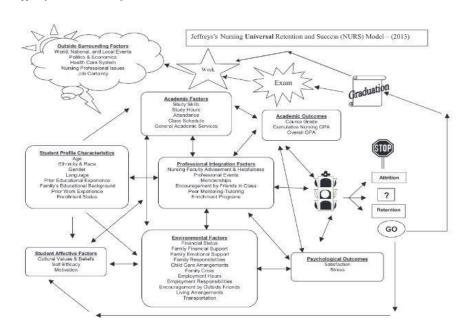
Pairing the Iowa model and Jeffreys's nursing universal retention and success (NURS) Framework allows for this project to undertake optimization to a process and in a specialized specialty. The NURS framework "presents a globally-applicable framework for examining the multidimensional factors that affect undergraduate and graduate nursing student retention and success to make a positive difference" (Jeffreys, 2015, Conceptual Model section). Jeffreys, 2015, states that "growing healthcare needs amidst a population explosion, an aging society, shrinking resources, and a nursing shortage necessitate swift entry of highly qualified nurses into the workforce" (Jeffreys, 2015, p. 425). Even with continued efforts to improve persistence and retention in higher education, attrition continues to be problematic. The NURS framework outlines that there are student profile characteristics, environmental factors and academic factors

that can play into the outcomes of nursing education. Jeffreys, 2015, states that in all nursing

professions, dedication to improvement and development is critical to the field of study, in this

case professional nursing education. "Optimizing outcomes benefits individuals, the nursing

profession, the health care system, patients, organizations, and society at large" (Jeffreys, 2015,

p. 425). This framework allows nursing professionals a framework to examine factors that play

into success in academia (undergraduate and graduate) (Jeffreys, 2015). For this project, the

focus will be on student profile characteristics and academic outcomes (Jeffreys, 2015, Figure 3)

ad the assumptions defined by Jeffreys (2015): "Nursing student retention is best achieved by

focusing more comprehensively on success as going beyond minimal standards toward

optimizing outcomes aimed at achieving peak performance potentials" (p. 426).

Figure 3

Jeffreys's Nursing Universal Retention and Success Framework (NURS)

Note. The NURS (2013) model provides a globally relevant framework for understanding the multidimensional process of nursing student retention and success and for designing, implementing, and evaluating strategies that optimize outcomes (Jeffreys, 2015).

Jeffreys's NURS model highlights how factors impact the persistence of students in higher education. Some are affective and some are nonmodifiable. In an effort to assist the student and learning environment for improved retention, this practice and process change will assist the student in pursuit of education by identification of risk factors known to create barriers. This will allow current resources, already utilized by students who fall out of progression, to be utilized by incoming students in a proactive approach.

Establish Benchmarks

Benchmarking for this implementation will include internal benchmark practices, as it will be comparing metrics during three admission timeframes for one academic year. This will be ongoing benchmark reports, with current and forecasting metrics. The following are benchmarks in which the nursing program will target:

- 45% or more response rate combined from OR and MN ABSN nursing cohorts

- 10% reduction of failure rates in first semester of the nursing program

- 70% or higher graduation rate

Project Implementation and Process Plan

The full project will move throughout phases identified in the Iowa Model. This allows for the identification of important milestones and awareness of the need for the change. Continued efforts in each milestone effort will enhance the full cycle of change and identification of gaps during the implementation process.

Identifying Triggers

Identifying triggers can be perceived as easy. This is a misconception, as "knowledge triggers" usually require a mentor or EBP practitioner to disseminate new knowledge from research and will also require a more "top-down" approach to the change. This will require extensive planning, stakeholder engagement, and champions to have effective changes to practice (Melnyk & Fineout-Overholt, 2015, p. 283). Another terminology that is widely used are called problem triggers. These are well-known issues or recurring events that cause unwanted results. These tend to be focused and reported out from a team as well as seen in metrics that are reported by leadership. These triggers will have data to support change and can be more easily accepted with visibility. For CSP, these problem triggers are attrition rates for each academic year and the financial loss that accompanies it. As stated earlier, CSP College of Nursing had a 3.4 million loss in revenue due to attrition out of the nursing program. Just recently, for the academic year ending in Summer of 2022, preliminary results are attrition rate of 22% (see Table 4).

Table 4

Financial Impact of BSN Completion Rates at CSP College of Nursing Reported to Accreditation Body

Year of graduation	Calendar year of admission	Students admitted	Students Excluded	Students completing	Percent of students completing	Estimated financial impact***
2022	2020-2021	275	5	211	78%	64 x $17,000 = $1.08 million
2021	2019-2020**	476	20	376	82%	100 x $17,000 = $1.7 million
2020	2018-2020*	334	20	302	96%	32 x $17,000 =

						$544,000
2019	2017-2018	97	13	67	80%	30 x $17,000 = $510,000
2018	2016-2017	53	10	38	88%	15 x $17,000 = $255,000
2017	2015-2016	41	10	22	71%	19 x $17,000 = $323,000

Note. Data is based on the cohorts who were scheduled to graduate in a given calendar year using a 16-month time to completion for ABSN.

With retention rates ranging from 71% to 96%, the loss of revenue loss will estimate between $255,000 to 1.7 million dollars depending on size of cohorts admitted per semester.

Current data to determine if a student is an early academic risk stems from preadmission data only (see Table 5). Nursing students admitted without meeting admission requirements for a GPA and TEAS scores will still be allowed to be admitted but through a petition process and will be placed on an early academic alert ranking that will allow faculty and administration to proactively intervene with academic resources such as tutoring and having an academic success coach assigned. This is the historical admission guidelines along with what has been supported as a recommended guideline for admission from a GPA requirement. With those academic admission criteria, out of progression rates still held to about 15-20% for each semester cohort with the most happening in pathophysiology and pharmacology courses. Wholistic admission process should also include the other risk factors identified in research.

Table 5

Determinants Reviewed Upon Admission

Determinants	Reviewed upon admission prior to intervention	Percentage captured upon admission	Data source
Cumulative GPA	Yes	100%	Transcripts (admissions team)
Science GPA	Yes	100%	Transcripts (admissions team)
TEAS	Yes	100%	ATI software (admissions team)
Student born outside of the United States	No	0%	N/A
Parents born outside of United States	No	0%	N/A
English as primary language spoken in home	No	0%	N/A
Ethnicity	No	0%	University application (optional)
Race	No	0%	University application (optional)

Note. Race and ethnicity are self-reported by students in their application to the university. This data was never utilized for admissions into the nursing program, and therefore has no historical data.

The size of cohorts admitted into the nursing program is greatly decided upon resources needed and clinical opportunities granted in the communities of the campus. This has clear ramifications to the health of the organization's financial pillar and the students' welfare in bettering their own lives.

Clinical Applications

Clinical applications are addressed when clinicians have an inquiring mindset. These applications can be clinical in nature, but also operational or process oriented as well. Process and operational problems also account for many gaps in delivery to the students, which will then lead to less optimal outcomes. For this practice change the focus will be a process change to acquire, track and act on data for better outcomes. This will close a known gap in the identification of students at risk for attrition.

The Smartsheet student survey will assist new students coming into the program by enhancing awareness and transparency of those at risk.

Organizational Priorities

Organizational priorities are always accounted for when looking at evidence-based practice changes or implementations. There is a limited number of resources in every system and will need to be overseen or accounted for. Areas of focus, due to the limited resources of a system, need to address areas that can give the highest rate of return (Melnyk & Fineout-Overhold, 2015, p. 285). By doing so, there will be better buy-in from stakeholders as it will be aligned with the system or organizational strategic priorities. These priorities will be focused on improving revenue loss, improving student outcomes, and efforts to drive improvements in the nursing workforce shortages. For this implementation, the focus will be driven by acquiring student data through a self-reporting survey filled out by the nursing student. In an effort to obtain as much student input, an EBP team will assimilate to help drive action.

Forming a Team

Forming a team requires a commitment to addressing a topic. The team must be in agreement that the focus of a topic is important to warrant the time and energy spent is worth it.

Teams will encompass a magnitude of different departments and expertise, especially when it is in a large organization. The College of Nursing at CSP is composed of faculty (in didactic and clinical teams), administration, educational coordinators, and admission team members. The EBP team will encompass an education coordinator, the ABSN Director, and the Dean of Nursing. This will ensure that there is enough representation "to address the project trigger" (Melnyk & Fineout-Overholt, 2015, p. 285). This team will "select, review, critique, and synthesize available research evidence" and will determine if it is enough to base a practice change addressing the trigger (Melnyk & Fineout-Overholt, 2015, p. 285). A Gantt chart was established and approved for milestone dates by stakeholders (see Appendix E).

Process/Practice Change

Build a Smartsheet dashboard to house student attrition risk data with enhanced custom notification of when a student self-identifies with different attrition risk categories from the Smartsheet survey. If a student has two or more factors or determinants identified on the survey, the student will be included in the early academic alert standard operating procedures for other students. The student survey (see Figure 4) includes questions that one could report are:

1. What gender do you identify with?
2. Have you previously completed a degree/diploma in higher education?
3. Were you born in a country other than the United States?
4. Were your parents/guardians born in a country other than the United States?
    a. If Yes: Was English spoken as the primary language in the home?
5. What ethnicity do you identify with?
6. What race do you identify with?

Figure 4

Smartsheet Survey

Student's First Name *

Student's Last Name *

Form Date Field *

To Which Campus Location of the ABSN Pre-licensure Program Are You Assigned *
Select or enter value

1st Semester Enrolled into Program *
Please select the semester you were enrolled for your entry into the program
Fall Semester starts in September
Spring Semester starts in January
Summer Semester starts in May
◯ Fall (Starts in September)
◯ Spring (Starts in January)
◯ Summer (starts in May)

What Gender Do you Identify With? *
Select or enter value

Previous Completion of Higher Education Program? *
Select or enter value

Were you born in a country other than the United States (US)? *
Select or enter value

Were your parents/guardians born in a country other than the United States? *
Select or enter value

What ethnicity do you identify with? *
Select or enter value

What race do you identify with? *
Select or enter value

English is spoken as the primary (main) language in the home? *
Select or enter value

☐ Send me a copy of my responses

Submit

Powered by smartsheet
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Once a survey is filled out, it will automatically populate into the data repository. The questions all have dropdown selections and are not in free text form. This allows for easier analytics. Race and ethnicity questions are listed from the federal guidelines.

The dashboard will have the following automation and conditional rules built:

1. Discrete task positive for:

   a. Gender - Male

   b. Have not completed previous degree

   c. Born outside of US - Yes

    d.   Parents born outside of US - Yes

    e.   English spoken as primary language in home - No

    f.   Ethnicity - Hispanic or Latino

    g.   Race - America Indian, Native Alaskan, Black or African American, Native Hawaiian or Pacific Islander

2.   If two or more discrete tasks are positive, alert via email will go to ABSN Director at the College of Nursing at CSP.

Conditional formatting (see Figure 5 and 6) will make the dashboard easier to visually pick out those at the highest risk with two or more risk factors. The dashboard cells will be highlighted in different colors depending on the risk factor. This will allow those with secure access to access and act timely on any notification.

Figure 5

Smartsheet Dashboard

Form Date Field	Campus Location	Semester Starting ABSN Program	Identified Gender	Completion of Previous Degree	Born Outside of US	Parents Born Outside of US
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Completed Previous As	No	Yes
01/05/23	ABSN Portland	Spring (Starts in Januar	Male	Have Not Completed P	Yes	Yes
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Have Not Completed P	No	Yes
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Completed Previous Ba	No	No
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Completed Previous As	No	No
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Completed Previous Ba	No	No
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Completed Previous Ba	No	Yes
01/05/23	ABSN Portland	Spring (Starts in Januar	Male	Have Not Completed P	No	Yes
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Completed Previous Ba	No	No
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Completed Previous Ba	Yes	No
01/05/23	ABSN Portland	Spring (Starts in Januar	Male	Have Not Completed P	No	No
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Completed Previous Ba	Yes	Yes
01/05/23	ABSN Portland	Spring (Starts in Januar	Female	Completed Previous Ba	No	No

Figure 6

Automation Rules and Conditional Formatting

Evaluation

Evaluation of this project will include a technical workflow tested with pseudo-student names in a pilot phase. This will be tested with stakeholders entering in "student" data and testing the logic and algorithms of the dashboard notification process. The pilot testing phase lasted one month to input, assess, and change any build features needed before implementation and was finished by January 2023. Postimplementation, the evaluation plan will be 2 weeks post orientation day to look at the number of responses received and demographic data of the survey results. At the end of the semester in May, evaluation of the 1st semester course failures will also be reviewed.

Implementation of Evidence-Based Intervention and Results

Implementation of practice/process changed occurred middle of January 2023, with the Spring 2023 Semester ABSN Nursing cohort. The students came to orientation and had the opportunity to use the QR code, or the link embedded in their agenda to fill out the student survey. By the end of the week, the College of Nursing had received 47 submissions from students. There was no issue with student access or submission of surveys, no barriers of data input on the dashboard, and all results showed accurate conditional formatting.

Evaluating Practice/Process Changes and Dissemination of Results

The number of responses from the Spring 2023 nursing student cohort totaled to be 47 (n = 47). The demographic data from the responses received were:

- 85.1% from OR and 14.9% MN

- 21.3% male; 78.7% female

- 25.5% no previous diploma/degree

- 17% Born Outside of the US

- 29.8% Parents Born outside of US

  - 12% English not primary language in home

- 17% Hispanic or Latino

- 17% Asian; 6.4% Black/African American; 76.6% White

Within the first week of the semester, all self-reported determinants were notified to leadership and identified within the first week. Of the responses, a total of 45% of the entire cohort participated from the OR and MN ABSN cohorts combined. Out of the 47 students, 85.1% were doing their nursing program in OR, and 14.9% were doing their nursing program in MN, both of which are through CSP. 7 students were identified to be of the highest risk with reporting three or more risk factors or determinants. 17 students had two or more risk factors that were not previously identified by the admission process as being an early academic alert student.

Before our survey and dashboard creation, the above factors were not being identified or tracked, and therefore could not be acted upon with mitigation strategies that currently are offered within the nursing program. This includes our peer mentorship program, academic coaches, academic advisors, and help in finding professional groups for support. This dashboard allows administrators of the nursing program to proactively offer supportive services to those identified at higher risk of attrition.

At the end of the spring 2023 semester, there currently is a projected number of 16 students who will be at risk of failing a course in the first semester. Fall semester 2022, there was a total of 25 students who did not progress. Spring 2023 first semester students, there was a total of 17 students who did not succeed in one or more of the courses. This is a reduction of 10% of the students who would enter out-of-progression (see Table 6). This information was outlined and presented to all stakeholders and faculty on May 1, 2023 (see Appendix E).

Table 6

First Semester Course Failure Rates

Semester	Cohort total	Number of students with course failure in first semester	Percentage of cohort
Fall 2022	113 (99+14 repeaters)	25	22.12%
Spring 2023	132 (107+25 repeaters)	17	12.88%

Strengths and Limitations

Strengths of this evidence-based practice project include support from academic leadership and the alignment with the University's strategic goals. Improvements to support students who are at risk, at the earliest time possible, is critical to successful progression throughout any program or degree. Being able to identify students, after admission, with demographic profiles shown by evidence to be at higher risk of attrition is critical to having proactive strategies and support.

Another advantage is the evidence showing there is statistical evidence to support this EBP. Many studies show that there are nonmodifiable risk factors that impact students' success in higher education. The evidence was mainly descriptive and observational, with one 40-year systematic meta-analysis of the retrospective and prospective descriptive research available. This research is valuable for studying individuals or a cohort in the natural environment. Great for identifying great areas for further research.

Limitations include limited research on the utilization of electronic modalities to track and identify students with the determinants in the research. Most research done on this topic is also limited. Many federal funds and grants are not prioritizing research on attrition risk, as there

is a limited impact on the federal budget if a student is successful or not in higher education. Another limitation is the number of participants. This EBP is only at one college of nursing that resides in two different states and only includes students that are in the accelerated bachelorette nursing degree (ABSN) program.

Ethical Considerations and Conflicts of Interest

Some ethical considerations would be the potential fear of reporting determinants based on historical experiences of bias. Individuals are usually careful in what they will and will not report if it could be determined to be seen as a "negative". Another consideration is that this type of data should never be part of admission criteria. It should only be used to support students once admitted as much of this data and status would be considered protected.

Conclusions and Future Implications

There will always be a continued push for improvement in the representation of our communities and workforce. There is always a need to feel a sense of belonging and support in any endeavor. This evidence-based project allows nursing students to have positive results from a process change to help support students in their program. It also allows the College of Nursing to improve in proactive tracking of academic success with supportive strategies, leading to potential improvement in program completion within 16 months. This change also highlights the support that can be offered to the diverse background of nursing student in an effort to improve diversity in the nursing workforce, currently a strategic goal of the American Association of Colleges of Nursing (The American Association of Colleges of Nursing [AACN] Homepage, n.d.).

This provides a great opportunity for future research in the nursing academic environment to look at other variables that may impact attrition, progression, and graduation

rates. This will help individuals and the communities which they will eventually serve. A vital

measure to address for the future of health care.

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Appendix A

Poster Abstract

Abstract

Introduction: Student success in higher education is a vital focus for the health of a community, and improvement to an individual's life, and equally detrimental if a student leaves an educational program without a degree. The purpose of this project is to improve the early identification of students at risk of attrition, in a nursing program, by utilizing an electronic dashboard interfaced with a self-reporting student survey to identify determinants that have been statistically significant as a factor for student attrition.

Background: Current accreditation benchmark for nursing program completion is 70% for Bachelors Science of Nursing degrees. Concordia St. Paul University (CSP), College of Nursing has a completion rate of 82.2% in 2021 and 76% in 2022. There is statistical evidence that gender, location of birth, English as the primary language at home, and race/ethnicity does have an association with the outcome of completion of a nursing degree. CSP is dedicated to bettering the lives of students through earlier identification of attrition risk and assisting in the fulfillment of academic goals. In doing this, it will benefit the nursing students, nursing workforce, and financial sectors of Universities with nursing programs.

Methods: Using Jeffery's Nursing Universal Retention and Success Model and the Iowa Model of Evidence-Based Practice to Promote Quality Care (IMEBPPQ) for project implementation, created a framework and guiding principle for the project. Upon entry into the accelerated bachelorette of science nursing (ABSN) program at CSP, students utilized a survey to report demographic data that interfaced with a privacy-protected electronic dashboard. Seven factors and determinants were determined to be supported by quality research and tracked by the leadership team within the College of Nursing.

Results: There was a total of 47 students who filled out the self-reporting survey out of 110 total students entering the program in Spring Semester of 2023. The response rate was 50% for the Oregon nursing program and 23% for the Minnesota nursing program. Out of the 47 students, 85.1% of them were doing their nursing program in OR, and 14.9% were doing their nursing program in MN, both of which are through CSP. The following, identified with an asterisk, are non-modifiable factors that could impact the successful completion of the nursing program that were self-reported by nursing students in the ABSN program (n=47):

- 21.3% male*; 78.7% female
- 25.5% no previous diploma/degree*
- 17% Born Outside of the US*
- 29.8% Parents Born outside of the US
  - 12% English is not the primary language in the home*
- 17% Hispanic or Latino*
- 17% Asian*; 6.4% Black/African American*; 76.6% White

Before our survey and dashboard creation, the above factors were not being identified or tracked, and therefore could not be acted upon with mitigation strategies that currently are offered within the nursing program. This includes our peer mentorship program, academic coaches, academic advisors, and help in finding professional groups for support. This dashboard allows administrators of the nursing program to proactively offer supportive services to those identified at higher risk of attrition.

Evaluation: The project was successful at capturing data that can influence program completion at CSP. Out of all nursing students admitted into the Spring Semester of 2023, through the use of the self-reporting survey, administrators were able to identify 17 students that had two or more risk factors for attrition. These 17 students, 15% of the newly admitted cohort, were not identified as at risk when entering the nursing program with current academic alerts in place, such as overall Grade Point Average (GPA), science cumulative Grade Point Average (sGPA), and the ATI Test of Essential Academic Skills (TEAS) assessment score. With this survey and electronic dashboard, Concordia St. Paul College of Nursing can identify students more easily and help them with supportive measures much earlier in the program.

Keywords: nursing student attrition, determinants of attrition, higher education

Appendix B

EBP Poster

Appendix C

Conference Approval

Conference Approval to Poster Present:

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http://www.wshep.com

May 5, 2023

Re: "Transforming Healthcare""

January 17-18, 224

Conference Approval Code #20-586477

Presentation:

Dear Tennille Gifford,

It is with pleasure that we have accepted your research for podium presentation at our nurses' conference in Honolulu, HI, January 17-18, 2024

We look forward to meeting you in Hawaii.

Regards,

Judy D'Angelo RN MSN ANP LNC

Appendix D

Stakeholder Presentation

Improving Nursing Student Retention: Early Identification of Determinants Causing Attrition in Nursing Academic Programs

University of San Diego

Tennille Gifford MSN, RN, RN-BC, CPHIMS
DNP Student: Nursing Informatics and Data Science
Faculty Advisor: Dr. Jud Simonds PhD, RN
University of San Diego

CONCORDIA ST. PAUL COLLEGE OF NURSING

Background and Significance

- Current completion rate from last three academic years ranges (within program 16 months) is 76%-87.5%.
- Current state: Concordia has zero ability to identify students at risk for evidence based factors that have been shown to place a nursing student at risk for attrition. Factors include race, ethnicity, previous degree/diploma success, primary language in home, gender, and location of birth (Outside of US)
- Concordia St. Paul CON has higher percentage of racial/ethnic diversity than reported in US and the state of OR and MN.

Driving Forces for Project

- Review and obtain current student data that would place a nursing student as an early academic alert at Concordia St. Paul University
- Identify appropriate and evidence based determinants that places a nursing student at risk for attrition, creating an electronic dashboard in efforts for early identification and action.
- Identify students at risk by 10% in order to facilitate meaningful academic supportive measures.

PICO(T) Question

P: For nursing students who are admitted into Concordia st. Paul College of Nursing ABSN Program
I: does an electronic dashboard of select determinants
C: compared to without the dashboard
O: improve the ability to identify nursing students who could be at risk for attrition in higher education
T: within 5 months post implementation

"For nursing students who are admitted into Concordia st. Paul College of Nursing ABSN Program, does an electronic dashboard of select determinants, compared to without the dashboard, improve the ability to identify nursing students who could be at risk for attrition in higher education within 5 months?"

Framework/EBP Model

For this practice change, the Iowa Model of Evidence-Based Practice to Promote Quality Care (IMEBPPQ) will be utilized and followed from identification to dissemination. The Iowa Model of EBP will be utilized to improve the ability, via a self-reporting tool, to identify students who are at risk of attrition in the nursing program at Concordia St. Paul University. This model utilizes a "pragmatic multiphase change process with feedback loops" (Melnyk & Fineout-Overholt, 2015, p. 283). It will be good for finding solutions to problems during the scientific process, and also for its "applicability and ease of use" since the process of admission into a nursing program includes nurses, the admission team, and administration personnel (Melnyk & Fineout-Overholt, 2015, p. 283).
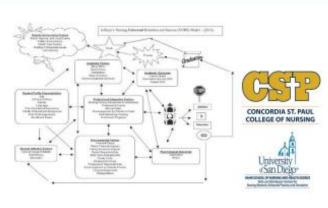
The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

Note: Permission to use image was requested and granted on 07/08/2023

Jeffreys's Nursing Universal Retention and Success Framework (NURS)

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Synopsis of the Evidence

Author(s) Name of article	Evidence Ranking (use Melnyk pyramid)	Summary of Evidence – key bullet points
	Level IV	• Demographics: Statistically significant of progression and diversity ($X2 = 10.09$, $p = 0.002$) • Social Community Context: Statistically Significant for being born outside of US ($x2 = 4.90$, $p = 0.031$), parents born outside of US ($X2 = 20.62$ or $x 0.091$), and English primary language spoken in home ($X2 = 13.26$, $p = 0.005$) • Note: 80% of the seniors who failed rescreened one or both semester were born outside of US compared to 21.6% of the group who were successful.
	Level I	• 40 yr Systematic Review with Meta Analysis • Female Gender: Statistically significant in Success of Outcome (Graduation) • Previous Degree: Statistically significant in Success of Outcome (Completion of previous degree or diploma program)
	Level III	• Retrospective Descriptive Design • Yes, there is significant evidence, as supported with this, that shows overall GPA, science GPA, and TEAS score does have correlation to higher education success. • Chi-square tests: difference in first semester course success and admission criteria • T-tests: Examine differences in first semester HESI/KAPLAN test scores by admission criteria
	Theory	• Determine suitable method of measuring nursing workload based of documentation and acuity data • Prospective Study; Pearson correlation and regression utilized

Timeline

- Literature Review: June-August 2022
- Collect Pre-Data: August - October 2022
- Leadership Final Approval: October 2022
- Technical Build and Pilot: October - December 2022
- Implementation: January 2023
- Post EBP Data: January - February 2023
- Poster Presentation: March 2023
- Final Review of Progression Data: April-May 2023
- Stakeholder Presentation May 1, 2023

EBP Timeline smartsheet

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Smartsheet Survey

1. What gender do you identify with?
2. Have you previously completed a degree/diploma in higher education?
3. Were you born in a country other than the United States?
4. Were your parents/guardians born in a country other than the United States?
   1. If Yes: Was English spoken as the primary language in the home?
5. What ethnicity do you identify with?
6. What race do you identify with?

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Dashboard Build

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Results/Outcomes

- January 2023 Semester 1 Cohort: identified all self-reported determinants within the first 7 days of the semester.
- Electronic dashboard alerted ABSN Director, once survey submitted, of 2 or more determinants known to place a student at higher risk of attrition.
- Current participation is about 45% of the OR and MN cohort combined.
- identified 7 students that are highest risk of attrition, 3 or more determinants, due to identified in survey for Spring 2023 Semester.
- 17 total students identified with 2 or more determinants, not identified by traditional admission academic alert criteria.

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Cost-Benefit & ROI

With retention rates ranging from 71% to 96%, the loss of revenue loss will estimate between $255,000 to 1.7 million dollars depending on size of cohorts admitted per semester.

Year of Graduation	Calendar Year of Admission	# of Students Admitted	# of Students Excluded	# of Students Completing	% of Students Completing	Estimated Financial Impact***
2022	2020-2021	215	1	211	98%	64 x $17,000 = 1.09 million
2021	2019-2020**	475	20	376	82%	109 x $17,000 = 1.7 million
2020	2019-2020*	114	20	362	96%	42 x $17,000 = $744,000

Implications for Clinical Practice & Sustainability

- Improved ability to identify students at risk in CON at Concordia St. Paul.
- Improvement in proactive tracking of academic success with supportive strategies, leading to potential improvement in program completion within 16 months.
- Increase in diversity of nursing workforce, currently a strategic goal of the American Association of Colleges of Nursing (*The American Association of Colleges of Nursing (Aacn) Homepage*, n.d.).

Conclusions

- Before our survey and dashboard creation, the above factors were not being identified or tracked, and therefore, could not be acted upon with mitigation strategies that currently are offered within the nursing program. This includes our peer mentorship program, academic coaches, academic advisors, and help in finding professional groups for support. This dashboard allows administrators of the nursing program to proactively offer supportive services to those identified at higher risk of attrition.
- At the end of the semester there currently is a projected number of 16 students who will be at risk of failing a course in first semester. Last semester, Fall 2022, there was a total of 25 students who did not progress. Spring 2023 first semester students, there was a total of 17 students who failed in one or more of the courses. This is a reduction in 10% of the students who would enter out-of-progression.

Thank you for taking the time to listen to my proposed and upcoming DNP Project. Thank you to all faculty that continually assist learning and growth of our nursing students.

Thank you Dr. Simonds and Dr. Hollie Caldwell for fostering a continual learning attitude and being a guide/sponsor for this project.

Poster

References

References

Appendix E

CITI Certification

Completion Date 12-Oct-2021
Expiration Date 11-Oct-2024
Record ID 33333516

This is to certify that:

Tennille Gifford

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Human Subjects Research - SBR
(Curriculum Group)
Social & Behavioral Research - Basic/Refresher
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

University of San Diego

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wf83f9a57-f335-462e-8b0c-f3e5859c0b42-33333516

Completion Date 12-Oct-2021
Expiration Date 11-Oct-2024
Record ID 45609308

This is to certify that:

Tennille Gifford

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Human Subjects Research - Biomed
(Curriculum Group)
Biomedical Research - Basic/Refresher
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

University of San Diego

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wf2271dcf-43cd-4db0-b961-75c50e104e58-45609308

Appendix F

Program Exemplar and Outcomes

USD DNP Program Outcomes Exemplar (Part-time Program)
Tennille Gifford MSN, RN, RN-BC, CPHIMS

Clinical/Practicum – must total 1000 clinical hours upon completion of
program
Clinical Practicum hours in MSN program: 500 Hours- University of San Diego MSN Nursing Informatics
Program

Timeline and Hours:
https://docs.google.com/spreadsheets/d/15vlfrNagBDRymMHnr34LZt_UcNIIeIXD6gZpVr3b4j4/edit?usp=sharing

Hours:
DNPC 630: Timetracker

AACN DNP Essentials	USD DNP Program Objectives	Exemplars *Provide bulleted exemplars that demonstrate achievement of each objective
DNP Essential I: Scientific Underpinnings for Practice	II: Synthesize nursing and other scientific and ethical theories and concepts to create a foundation for advanced nursing practice.	*Fall 2020* ● *DNPC 611 Module 6: Create a PowerPoint presentation about a clinical guideline and the use of the Agree II tool to evaluate the chosen guideline https://docs.google.com/presentation/d/1XJP2FW7g4wgpWNXpSeHLKXzelInAEVIF3n6il3vMMbg/edit?usp=sharing*
DNP Essential II: Organizational & System Leadership for Quality Improvement & Systems Thinking	V: Design, implement, and evaluate healthcare delivery systems and information systems that meet societal needs and ensure accountability for quality outcomes.	*Fall 2020* ● *Learned to formulate a PICOT question* ● *Implemented an evidence-based project proposal to*

		meet the Title 22 requirements for documentation of patient classifications *Fall 2021* ● *DNPC 660: Service Line Workflow Analysis:* [Proposal for Service Line Workflow Analysis.docx](#)

DNP Essential III: Clinical Scholarship & Analytical Methods for Evidence-Based Practice	IV: Incorporate research into practice through critical appraisal of existing evidence, evaluating practice outcomes, and developing practice-based guidelines.	*Fall 2020*
		   ● *DNPC 611 Module 2 &3 Literature Review Assignment/paper for EBP Project*
		   ● *DNPC 611 Module 2: Evaluate the methods of evaluating qualitative and quantitative evidence*
		Fall 2022
		   ● *DNPC 648 Module 7 Health Policy Final Paper:* [Health Policy Paper (6).pdf](#)

DNP Essential IV: Information Systems/Technology & Patient Care Technology for Improvement & Transformation of Health Care	VII: Incorporate ethical, regulatory, and legal guidelines in the delivery of healthcare and the selection, use, and evaluation of information systems and patient care technology.	*Fall 2020*
		   ● *DNPC 630 Module 7 EBP Paper and Project Proposal that includes utilization and adherence to documentation in a patient classification system*
		https://docs.google.com/document/d/12xvlm8NQxKifRgHsHvTwSNi90xj2MoljPjA4a97ViYI/edit?usp=sharing
		Fall 2022
		   ● *HCIN 554: Behavior Health Telemedicine and Telehealth initiative:* [Behavioral Health Telemedicine and Telehealth Initiative (1) (1).pdf](#)

DNP Essential V: Health Care Policy for Advocacy in Health Care	III: Demonstrate leadership in collaborative efforts to develop and implement policies to improve health care delivery and outcomes at all levels of professional practice (institutional, local, state, regional, national, and/or international).	*Fall 2020*
		   ● *DNPC 611 Module 3: Examined leadership strategies for creating and sustaining evidence-based practice organizations*
		Spring 2021
		   ● *DNPC 626 Module 1: Strategic Planning SWOT Analysis:* [Strategic](#)

		Planning *Fall 2022* ● *DNPC 648: Health Policy Presentation* DNPC 648: Health Policy Analysis
DNP Essential VI: Interprofessional Collaboration for Improving Patient & Population Health Outcomes	I: Demonstrate advanced levels of clinical practice within defined ethical, legal, and regulatory parameters in designing, implementing, and evaluating evidence-based, culturally competent therapeutic interventions. III: Demonstrate leadership in collaborative efforts to develop and implement policies to improve healthcare delivery and outcomes at all levels of professional practice (institutional, local, state, regional, national, and/or international).	*Fall 2020* ● *DNPC 611: Module 4: Implementation model which you will use for your EBP project question with your rationale for choosing this particular model* ● *DNPC 611: Module 5: Using evidence to influence policy as well as to disseminate that evidence* *Fall 2022* ● *DNPC 648 Health Policy Presentation:* DNPC 648: Health Policy Analysis
DNP Essential VII: Clinical Prevention & Population Health for Improving Nation's Health	VI: Employ a population health focus in the design, implementation, and evaluation of health care delivery systems that address primary, secondary, and tertiary levels of prevention.	*Spring 2023* ● *HCIN 615: Module 7 Project Presentation - Early Identification of Determinants Causing Attrition in Nursing Academic Programs* ●
DNP Essential VIII: Advanced Nursing Practice	I: Demonstrate advanced levels of clinical practice within defined ethical, legal, and regulatory parameters in designing, implementing, and evaluating evidence-based, culturally competent therapeutic interventions.	*Fall 2020* ● *DNPC: 611 Module 1 Discussion Assignment on what clinical problem to improve and barriers to improving that problem through change management life cycle* *Spring 2023* ● *HCIN 615: Module 6 Full Draft - Early Identification of Determinants Causing Attrition in Nursing Academic Programs Final Paper: https://cspsoftware-my.sharepoint.com/:w:/g/personal/tgifford_csp_edu/EY7M7cZikTVPvAHZiJmsf0kBymW7fU-7L2zWFOE6ZjZvLQ?e=f1B1SF*