



# Identification of Risk Factors for Imposter Syndrome among Healthcare Professional Students

COLLEGE OF PHARMACY AND PHARMACEUTICAL SCIENCES

THE UNIVERSITY OF TOLEDO

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## Background

- The term 'imposter syndrome' refers to "an internal experience of intellectual phoniness" in high-achieving individuals regardless of academic and professional accomplishments.<sup>1</sup>
- Individuals experiencing imposter phenomenon are unable to internalize and accept their own successes. Instead, they often attribute such success to luck rather than skill and fear that they may be identified as a fraud by others.<sup>2</sup>
- Negative mental health outcomes have been linked to imposter phenomenon, including depression, low self-esteem, perfectionism, anxiety, burnout, and suicidal ideation.<sup>3-6</sup>
- Recent studies have found an increasing prevalence of imposter syndrome among healthcare professionals, including healthcare professional students. However, risk factors for imposter syndrome have not been clearly defined.<sup>7-10</sup>
- The Clance Imposter Phenomenon Scale (CIPS) is a validated tool to evaluate feelings of imposter syndrome and the extent of such feelings. It is comprised of a 20-question survey using a 5-point Likert scale, and overall scores range from 20 to 100.<sup>11</sup>

Total CIPS Score	Interpretation
≤ 40	Few imposter syndrome characteristics
41-60	Moderate imposter syndrome characteristics
61-80	Frequent imposter syndrome characteristics
> 80	Intense imposter syndrome characteristics

## Methods

### Study Design

- Institutional Review Board exempt, cross-sectional study

### Primary Objective

- To determine the prevalence of imposter syndrome among healthcare professional students at the University of Toledo during the 2023-24 academic year

### Secondary Objectives

- To identify potential risk factors associated with imposter syndrome among healthcare professional students at the University of Toledo via a sub-analysis of the primary outcome
- To determine the level of awareness of imposter syndrome among healthcare professional students at the University of Toledo
- To determine healthcare professional students' impressions of how imposter syndrome is addressed in curricula at the University of Toledo

## Methods

### Survey Distribution

- A recruitment email was sent to 9 healthcare professional program directors with a request to disperse the link for an anonymous 39-question Qualtrics™ web-based survey to students within their program.

### Survey Components

- Background demographics and potential risk factors
  - Age
  - Ethnicity
  - Gender identity
  - LGBTQIA identity
  - First-generation college student status
  - Healthcare professional program
  - Academic year
  - Cumulative GPA
  - Identification of a mentor
  - Professional organization involvement
  - Leadership positions held
- Awareness and impression of imposter syndrome
- Clance Imposter Phenomenon Scale (CIPS)
- Patient Health Questionnaire-2 (PHQ-2) Screening Tool
- Generalized Anxiety Disorder-2 (GAD-2) Screening Tool

### Statistical Analysis

- SPSS, version 29 (IBM Corporation)
- CIPS ≥ 61 is interpreted as experiencing imposter syndrome
- PHQ-2 and GAD-2 score ≥3 interpreted as experiencing depression and anxiety, respectively
- Chi-square tests used to assess association of risk factors with feelings of imposter syndrome for nominal variables
- Mann-Whitney U used to determine differences in feelings of imposter syndrome based on risk factors for ordinal variables

## Results

### Survey Response

- Estimated distribution rate 31.3% (674/2156)
- Estimated response rate 21.8% (147/674)
- 8 responses excluded; did not complete CIPS questions
- 139 responses included in statistical analysis

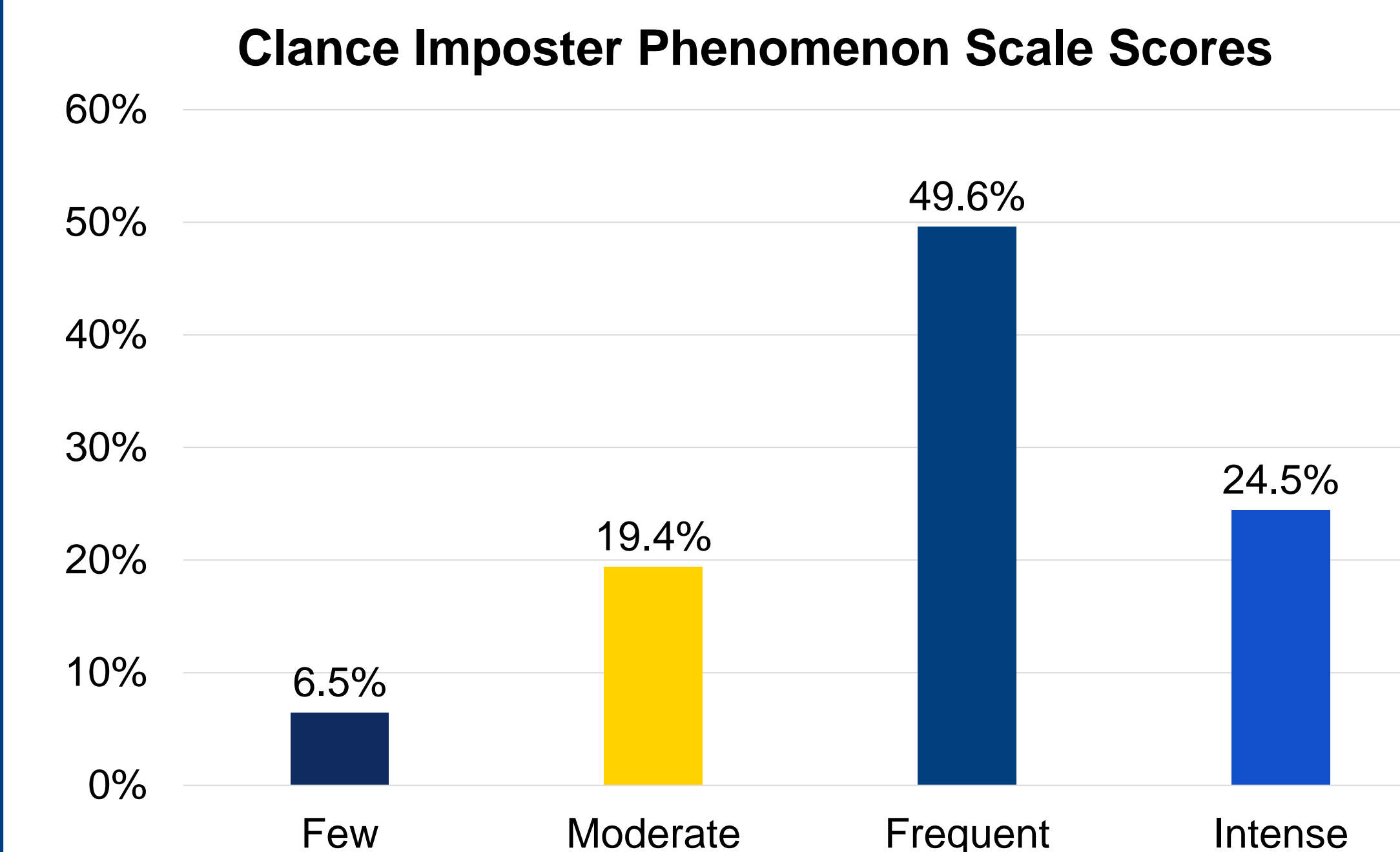
### Demographics of Included Respondents (n = 139)

Healthcare Professional Program	
Doctor of Pharmacy	90 (64.75%)
Respiratory Care	22 (15.83%)
Speech-Language Pathology	15 (10.79%)
Social Work	12 (8.63%)
Ethnicity	
Asian	5 (3.60%)
Black or African American	11 (7.91%)
Caucasian	106 (76.26%)
Hispanic or Latino	2 (1.44%)
Middle Eastern	7 (5.04%)
Gender Identity	
Cisgender female/woman	105 (75.54%)
Cisgender male/man	27 (19.42%)
Non-cisgender	5 (3.60%)

## Results

### Primary Endpoint

- Most respondents (74.1%; 103/139) had a CIPS score indicating frequent or intense imposter feelings.



### Secondary Endpoints

- Potential factors associated with imposter syndrome included:

Risk Factor	CIPS ≥ 61	CIPS < 61	P-value
<b>LGBTQIA Identity</b>			
Yes (19.4%)	25	2	.015
No (80.6%)	78	34	
<b>PHQ-2 score</b>			
Positive (54%)	37	4	.005
Negative (46%)	66	32	
<b>GAD-2 score</b>			
Positive (29.5%)	67	8	<.001
Negative (70.5%)	36	28	

- Factors not associated with imposter syndrome included:

Risk Factor	P-value
Age	.705
Ethnicity	.851
Gender identity	.171
First-generation college student status	.519
Healthcare professional program	.236
Academic year	.834
Cumulative GPA	.091
Identification of a mentor	.984
Professional organization involvement	.852
Leadership positions held	.442

- Most students (88.5%) were familiar with imposter syndrome prior to the survey

- However, most respondents (67.6%) felt that imposter syndrome was not adequately addressed within their program's curriculum

## Discussion

- Additional data from a larger, more diverse population is needed to determine potential risk factors for imposter syndrome among healthcare professional students

### Strengths

- Inclusion of healthcare professional programs that have not been extensively studied in prior literature
- Use of validated tools to measure feelings of imposter syndrome, anxiety, and depression

### Limitations

- Not all healthcare professional programs represented in the survey
- Majority of responses were from student pharmacists
- Primarily Caucasian and cisgender female respondents
- Potential for Type 2 error in risk factor analysis due to small subgroups

## Conclusions

- Healthcare professional students at the University of Toledo commonly experience imposter syndrome.
- Students who identify as LGBTQIA or experience feelings of depression or anxiety may be at higher risk of experiencing imposter syndrome.
- Healthcare professional students are aware that imposter syndrome exists but may not be learning about it through their curriculum.
- Healthcare professional students may benefit from addressing imposter syndrome within their curriculum.

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