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Motivations and perceived worth of pursuing a doctorate: a comparative study of Taiwanese doctorate holders in nursing and other health-related disciplines

Yun-Hsiang Tien¹ and Jingchi Huang^{1*}

Abstract

Background Compared to other health-related disciplines, the number of nursing doctorate holders is relatively small. This study aimed to analyze the primary motivation of nursing individuals for pursuing a doctorate and to determine whether they felt the pursuit was worthwhile after graduating. Additionally, this study compared whether the attitudes of nursing doctorate holders differed from those in other health-related disciplines.

Methods An analysis of secondary data was conducted. Original data was collected by the Science and Technology Policy Research and Information Center, Applied Research Laboratories in Taiwan, via an online questionnaire and analyzed using SPSS version 27.0. This study analyzed a sample of nursing doctorate holders ($n = 133$; 97.0% females) and other health-related doctorate holders ($n = 430$; 46.3% females) from this survey. Descriptive statistics, chi-square test, independent samples t-test, and multiple linear regression analyses were applied to compare the attitudes between participants in nursing and those in other health-related disciplines.

Results The primary motivation for pursuing a doctorate among nursing participants was most commonly attributed to it being a basic requirement for their desired work (35.3%). For participants in other health-related disciplines, the desire to become an outstanding professional in their respective fields was the primary motivation (30.2%). Whether it is the process of doctoral studies (85.8% vs. 73.9%; $p < .001$) or the benefits brought by doctoral degrees (87.2% vs. 76.8%; $p < .001$), participants in nursing showed significantly higher satisfaction than those in other health-related disciplines.

Conclusions The education authorities, hospitals, and universities should strive to provide high-quality, satisfactory doctoral education for nursing doctoral students, to meet their expectations for further studies.

Trial registration No medical interventions were administered to human participants in this study. Clinical trial number: not applicable.

Keywords Nursing, Doctorate, Taiwan, Motivation, Doctoral graduates

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Background

Completing a doctorate is an arduous process [1]. Although students may pursue a doctoral degree for different reasons, the prolonged time commitment, effort, and financial hardship influence their decision [2]. In theory, the training at the doctoral level is aimed at cultivating talent for academic research [3]. However, due to the serious issue of declining birth rates in Taiwan in recent years, an increasing number of universities are unable to recruit enough students and are closing down [4]. When academic institutions may not have enough job vacancies to accommodate doctoral graduates, and most industries do not necessarily require doctoral-level talent, the willingness of master's graduates in Taiwan to pursue a doctoral degree is currently low [5]. As a result, the number of doctoral students has been decreasing, and even Taiwan's top universities are experiencing a shortage of new doctoral candidates [6]. As such, this phenomenon has attracted attention of the higher education sector because of the potentially harmful effect it may have on scientific development and academic research.

Nursing has generally been considered a highly practice-oriented discipline, leading some to believe that pursuing a higher degree and spending excessive time on theoretical knowledge is unnecessary [7]. In addition, the shortage of clinical nurses in Taiwan has been more serious than in many other fields, attributed to work overload and job stress resulting in a higher turnover rate [8, 9]. Since many nursing graduates are leaving the nursing field, it is even less likely that they will pursue a doctoral degree.

The importance of higher education and academic research in nursing cannot be overstated. Since 1997, eleven departments or institutes in Taiwan have offered nursing doctoral programs, including the Doctor of Philosophy (Ph.D.) and the Doctor of Nursing Practice (DNP). Although a doctoral degree is not a guaranteed path to a successful life, there is still a need for outstanding nursing professionals who are willing to pursue a doctoral degree and engage in nursing education and research [10]. Therefore, it is essential to comprehend the motivations behind nursing individuals' pursuit of their doctoral degrees and whether they consider the investment of time and energy in obtaining a doctorate to be worthwhile. Universities can strive to fulfill the expectations of doctoral students, which are based on their reasons for pursuing studies. When these expectations are met, it fosters a positive reputation that can influence future students considering a doctoral program, either directly or indirectly. This is also directly beneficial for the cultivation of academic talent within the nursing field. Furthermore, Nursing, like other health-related disciplines, aims to enhance the quality of life for individuals and contribute to the overall well-being of society.

Then, do individuals in nursing hold a distinct or similar perspective compared to those in other health-related disciplines on the aforementioned issues? By comparing the attitudes of doctorate holders in nursing with those in other related disciplines, we can attain a more precise comprehension.

Literature review and theoretical foundation

Several studies have examined the motivations of doctoral students for pursuing a doctoral program, aiming to understand the attitudes of doctoral students across all fields of research or focusing on a particular area. For example, considering the significance of investigating factors that affect the output of doctoral research results, scholars examined the correlation between research motivations and outputs of Chinese doctoral students. They found that research motivation positively influences research outcomes among doctoral students. Additionally, the environment positively moderates the relationship between motivation and outcome [11]. Next, with a large number of international students in South Korea and the growing focus on creative arts therapy, researchers explored the study motivations and experiences of Chinese students engaged in creative arts therapy in South Korea. The findings indicated that psychological and emotional support programs could assist international students from various nationalities and cultures. The study abroad experience of students and its contribution to their lives beyond the acquisition of a degree warrant further consideration [12]. Additionally, some students from developing countries aspire to continue their education in advanced nations, and scholars have investigated the motivations behind Vietnamese doctoral students studying abroad. The results indicated that professional requirements and academic development, life enrichment and self-exploration, as well as previous transnational experiences and funding availability, are the primary motivational factors for Vietnamese doctoral students pursuing their academic endeavors abroad [13]. The breadth of topics covered is remarkably diverse.

Currently, there have been several studies in the academic community that specifically explore the motivations for pursuing a nursing doctorate. For instance, researchers examined the motivations and challenges faced by Israeli nurses in pursuing a doctorate, as well as the motivations and perceptions of registered nurses who have completed doctorates within an integrated health-care system in the United States [14, 15]. Compared to past research, this study has the following differences. Firstly, this study concentrates on Taiwanese individuals residing in Taiwan who have attained a nursing doctorate. Secondly, the article explores not only the motivations behind why these nursing individuals pursued their doctoral degrees but also analyzes their evaluations of the

benefits of holding a doctoral degree. Thirdly, the article investigates the attitudes of nursing doctorate holders and compares them with those of graduates from other health-related disciplines. Consequently, this study can fill a gap in nursing studies regarding the attitudes of doctorate holders.

The self-determination theory provided the framework for investigating the motivations behind pursuing a doctorate among individuals in nursing and other health-related disciplines. The self-determination theory makes two key assumptions. The first assumption of self-determination theory posits that individuals actively seek growth. To cultivate a coherent sense of self, people must achieve mastery over challenges and assimilate new experiences. Although people are frequently motivated by external rewards, such as money, prizes, and acclaim (referred to as extrinsic motivation), self-determination theory emphasizes internal sources of motivation, such as the need for knowledge or independence (intrinsic motivation) [16]. According to self-determination theory, individuals require a sense of autonomy, competence, and relatedness to achieve psychological growth. First, people need to feel in control of their behaviors and goals. This sense of agency, where they can take direct action leading to tangible change, is crucial for fostering a sense of self-determination. Second, individuals must master tasks and acquire various skills. When people believe they possess the skills necessary for success, they are more inclined to take actions that will help them reach their objectives. Lastly, an integral component of self-determination is the capacity to experience a sense of belonging and connection with others [17]. An individual who pursues a doctorate because they are deeply fascinated by their field, passionate about contributing new knowledge, or enjoy the process of research is driven primarily by intrinsic motivation. This type of motivation aligns well with the principles of self-determination theory and tends to be more sustainable in the long run. Additionally, someone may also pursue a doctorate for extrinsic reasons, such as career advancement, prestige, or financial rewards. While these can be motivating in the short term, they may not be as fulfilling as intrinsic motivation unless they are linked to fulfilling autonomy, competence, or relatedness needs [18]. In alignment with this theory, we posited that individuals decided to pursue doctorates because they had been motivated either intrinsically or extrinsically. Therefore, the items in this study were proposed based on these two dimensions.

Furthermore, this study aimed to analyze the motivations of individuals in pursuing a doctorate and whether these motivations were fulfilled. Expectancy theory has been widely applied in studies of satisfaction, including those examining students' learning motivation [19–21]. Expectancy theory suggests that an individual's

motivation is a result of the extent to which they desire a reward (Valence), an assessment of the likelihood that their effort will lead to the expected performance (Expectancy), and the belief that the performance will result in the reward (Instrumentality) [22]. According to this theory, for someone to be highly motivated to pursue a doctorate, all three aforementioned elements must align positively. Firstly, the individual believes that their effort will lead to academic success and that they are capable of completing the doctorate. Secondly, the individual believes that successful completion of the doctorate will result in desirable outcomes, such as career opportunities, academic recognition, or personal satisfaction. Thirdly, the individual values these outcomes and finds them to be personally rewarding or important for their goals.

Methods

Research design and sample

The research methodology used in this study involved secondary data analysis from a network-based cross-sectional survey conducted in Taiwan. The original study, which occurred in June 2018, utilized Structured Query Language to extract data from the Platform on Human Resources in Science and Technology (PHRST) for doctoral graduates from 2001 to 2018. The survey targeted Taiwanese doctoral graduates currently residing or employed in Taiwan. Respondents without an email address or with incorrect email addresses were excluded from the study. A total of 33,632 survey invitations were sent out, with 3,930 responses received, resulting in 29,702 valid invitations. The questionnaire was administered online and anonymously. In the end, 4,919 questionnaires were collected, and after removing duplicate responses, a total of 4,897 valid questionnaires were obtained, yielding a response rate of 16.5%. Of the valid responses collected, 133 came from nursing doctorate holders, and 430 were from those in other health-related disciplines such as public health, pharmacy, medical nutrition science, rehabilitation science, and clinical laboratory sciences. In total, 563 doctorate holders were included in the study sample.

Study measures

The questionnaire was developed by a research center that serves as the leading government think-tank for science and technology policy and the primary platform for connecting Taiwan's research communities. It included questions about personal information related to demographic characteristics and doctoral studies, motivations for pursuing a doctorate, the benefits of pursuing a doctorate corresponding to those motivations, overall satisfaction with doctoral studies, current work (after completing the doctorate), and the perceived benefits

from doctoral studies. Participants were asked to select answers based on their background and attitudes.

The motivations for pursuing a doctorate included intrinsic and extrinsic factors related to professional advancement, future employment prospects, personal life goals, and the influence of others. Items assessing participants' attitudes towards the benefits of a doctorate in relation to these motivations were used to determine the extent to which these motivations were fulfilled. Participants indicated their level of agreement with each statement on a five-point Likert scale, ranging from 1 (totally agree) to 5 (totally disagree).

Statistical analysis

Statistical analysis was conducted using SPSS version 27.0. Descriptive statistics were utilized to present the general information of the participants. The chi-square test was employed to compare the distribution of general information and attitudes among participants in nursing and other health-related disciplines regarding their motivations for pursuing a doctorate, the benefits of obtaining a doctorate, their satisfaction with doctoral studies and current work, and the perceived benefits from doctoral studies. The independent samples t-test was utilized to compare the average attitudes of participants in nursing and other health-related disciplines regarding their satisfaction with doctoral studies and current jobs, as well as the perceived benefits from doctoral studies. Hierarchical regression was employed to analyze the factors influencing the perceived benefits of obtaining a doctorate.

Results

General information of participants

Table 1 summarizes the demographic characteristics and doctoral study information of participants in nursing compared to those in other health-related disciplines. The distribution of group characteristics was not equal. For example, there were more females among those in nursing in contrast to participants in other health-related disciplines (97.0% vs. 46.3%; $p < .001$). Additionally, most nursing participants had worked for a period of time before commencing their doctoral studies (95.5% vs. 59.1%; $p < .001$), thereby starting and finishing their doctoral studies at a later age. Furthermore, a relatively larger percentage of nursing doctoral graduates were married before deciding to study for a doctorate (67.7% vs. 43.0%; $p < .001$).

Primary motivations to pursue a doctorate

As shown in Table 2, the primary motivation for pursuing a doctorate in nursing was that this level of education was a basic requirement for their desired work, such as teaching or research positions in universities (35.3%). In contrast, the desire to become an outstanding figure in

their field was the primary motivation for participants in other fields (30.2%). Additionally, regarding the main reason that a doctorate is necessary for work or by the working institution, there were significant differences in the proportions between the two groups (18.0% vs. 5.3%).

Benefits of pursuing a doctorate

Upon evaluating the benefits of pursuing a doctorate for various motivations, significant differences were found in the participants' attitudes between those in nursing and those in other health-related disciplines (Table 3). For instance, with regard to being motivated by the belief that a doctorate is more competitive in the workplace, offering more opportunities for promotion and higher remuneration, the proportion of those in nursing who felt it worthwhile or very worthwhile to pursue a doctorate was significantly higher than that of those in other health-related disciplines (81.9% vs. 63.5%; $p < .001$). Similarly, the proportion of those in nursing who thought it was unworthwhile or very unworthwhile was significantly lower than that of those in other health-related disciplines (1.9% vs. 13.8%; $p < .001$). In addition, the distribution of attitudes did not significantly differ between the groups concerning being encouraged by master's thesis supervisors or families.

Satisfaction with doctoral studies, current work and doctoral benefits

Firstly, we compared the satisfaction with doctoral studies, current work, and doctoral benefits between respondents in nursing and other health-related disciplines through analysis of frequency distribution. As shown in Table 4, the proportion of participants in nursing who expressed themselves as satisfied or very satisfied was larger than in other health-related disciplines with their doctoral studies (85.8% vs. 73.9%; $p < .001$) and the doctoral benefits (87.2% vs. 76.8%; $p < .001$).

Next, we employed mean difference analysis to further compare satisfaction levels regarding doctoral studies, current work, and doctoral benefits between respondents in nursing and other health-related disciplines. As indicated in Table 5, the mean comparison between the two groups reveals that participants in nursing exhibited significantly higher satisfaction with their doctoral studies (1.75 vs. 2.10; $p < .001$) and doctoral benefits (1.59 vs. 1.97; $p < .001$) compared to those in health-related disciplines.

Factors influencing doctoral benefits perceived

In this study, we conducted hierarchical regression to analyze the factors influencing doctoral benefits perceived by the participants. We primarily examined the following factors. Firstly, considering that many individuals pursue doctoral degrees with the aspiration of securing university positions, we analyzed whether the

Table 1 General information of participants

Group	1	2	χ^2	Group	1	2	χ^2
Variable	N (%)	N (%)		Variable	N (%)	N (%)	
Current age			65.00***	Age at the commencement of doctoral studies			88.28***
30–34	1 (0.8)	17 (4.0)		<30	9 (6.8)	183 (42.6)	
35–39	3 (2.3)	75 (17.4)		30–34	36 (27.1)	119 (27.7)	
40–44	19 (14.3)	126 (29.3)		35–39	42 (31.6)	83 (19.3)	
45–49	44 (33.1)	115 (26.7)		40–44	36 (27.1)	29 (6.7)	
50–54	44 (33.1)	52 (12.1)		45–49	9 (6.8)	10 (2.3)	
55–59	21 (15.8)	34 (7.9)		>49	1 (0.8)	6 (1.4)	
>59	1 (0.8)	11 (2.5)		Age at graduation			71.95***
Sex			107.43***	<30	1 (0.8)	46 (10.7)	
Male	4 (3.0)	231 (53.7)		30–34	14 (10.5)	138 (32.1)	
Female	129 (97.0)	199 (46.3)		35–39	29 (21.8)	102 (23.7)	
Current workplace			57.63***	40–44	42 (31.6)	95 (22.1)	
Universities	115 (86.5)	212 (49.3)		45–49	34 (25.6)	31 (7.2)	
Others	18 (13.5)	218 (50.7)		50–54	12 (9.0)	13 (3.0)	
Marital status when deciding to study for a doctorate			24.69***	>54	1 (0.8)	5 (1.2)	
Single	43 (32.3)	245 (57.0)		Having suspended studies			8.25**
Married	90 (67.7)	185 (43.0)		Yes	55 (41.4)	121 (28.1)	
Having children under 12 years of age when deciding to study for a doctorate			29.70***	No	78 (58.6)	309 (71.9)	
Yes	73 (54.9)	125 (29.1)		Having full-time worked before commencing doctoral studies			61.59***
No	60 (45.1)	305 (70.9)		Yes	127 (95.5)	254 (59.1)	
Doctoral school Location			8.45**	No	6 (4.5)	176 (40.9)	
In Taiwan	101 (75.9)	372 (86.5)		Enrollment status			7.56**
Off Taiwan	32 (24.1)	58 (13.5)		Part-time	75 (56.4)	184 (42.8)	
Years spent to complete a doctorate			8.24*	Full-time	58 (43.6)	246 (57.2)	
<5	39 (29.3)	86 (20.0)		Years passed since graduation			7.98*
5–7	61 (45.9)	256 (59.5)		<5	46 (34.6)	107 (24.9)	
>7	33 (24.8)	88 (20.5)		5–10	57 (42.9)	176 (40.9)	
				>10	30 (22.6)	147 (34.2)	

Note: Group1: participants in nursing; Group2: participants in other health-related disciplines

$p^* < 0.05$; $p^{**} < 0.01$; $p^{***} < 0.001$

participants were employed in universities. Secondly, we were interested in determining whether the benefits of doctoral degrees are enduring, which led us to examine the duration since the participants' graduation. Additionally, we included an assessment of the participants' satisfaction with their doctoral studies and current jobs.

Initially, we utilized exploratory factor analysis to extract an adequate number of factors. Principal component analysis and the varimax rotation method were employed. The Kaiser-Meyer-Olkin coefficient was 0.90, and Bartlett's test of sphericity was significant at $p < .001$, indicating appropriateness for factor analysis. All factor loadings exceeded 0.7, and factors with eigenvalues

greater than 1.0 were extracted. In summary, two factors accounted for 68.31% of the total variance across the 9 items. The eigenvalues for these two factors were 5.02 and 1.13, explaining 48.43% and 19.88% of the variance, respectively. The first factor was labeled "intrinsic intentions," encompassing reasons originating from one's own will (items 1 to 7). The second factor was termed "extrinsic influences" referring to reasons that stem from external influences. The internal consistency reliability (Cronbach's α) of the two factors was 0.91 and 0.72, respectively. The variance inflation factor (VIF) of the factors were between 1.03 and 1.25.

Table 2 Primary motivations of doctoral graduates to pursue a doctorate

Item	Group	
	1	2
	N (%)	N (%)
Desire to further study one's field and become an outstanding person in a professional field	24 (18.0)	130 (30.2)
Yearn for the status of a doctoral graduate, or the socioeconomic status and a sense of achievement	4 (3.0)	13 (3.0)
Regard a doctorate as the ultimate goal of personal study	6 (4.5)	24 (5.6)
A doctorate is a basic requirement for desired work (e.g. teaching or research positions in universities)	47 (35.3)	117 (27.2)
A doctorate is more competitive in the workplace, offering more opportunities for promotion and higher remuneration	13 (9.8)	54 (12.6)
Being required for the work or by the working institution	24 (18.0)	23 (5.3)
Regard pursuing a doctorate as a new life goal and experience	10 (7.5)	35 (8.1)
Being encouraged by the master thesis supervisor	3 (2.3)	18 (4.2)
Being encouraged by family and a desire to meet the expectations of others	0 (0)	11 (2.6)
Other	2 (1.5)	5 (1.2)
Total	133 (100)	430 (100)

Note: Group 1: participants in nursing; Group 2: participants in other health-related disciplines

$\chi^2=32.88$, $p<.001$

Table 3 Benefits of pursuing a doctorate by the participants

Item	Group	N (%)					χ^2
		Very unworth-while	Unworth-while	Neutral	Worth-while	Very worth-while	
Desire to further study one's field of study and become an outstanding person in this field	1	0 (0)	3 (2.5)	18 (15.3)	45 (38.1)	52 (44.1)	13.37**
	2	5 (1.3)	20 (5.2)	66 (17.2)	187 (48.8)	105 (27.4)	
Yearn for the status of a doctoral graduate, or the socioeconomic status and a sense of achievement	1	2 (1.9)	2 (1.9)	23 (22.1)	44 (42.3)	33 (31.7)	12.51**
	2	17 (5.0)	27 (8.0)	95 (28.1)	132 (39.1)	67 (19.8)	
Regard a doctorate as the ultimate goal of personal study	1	1 (1.0)	3 (3.1)	13 (13.3)	35 (35.7)	46 (46.9)	20.76***
	2	13 (3.9)	27 (8.1)	77 (23.2)	132 (39.8)	83 (25.0)	
A doctorate is a basic requirement for desired work (e.g. teaching or research positions in universities)	1	0 (0)	2 (1.7)	13 (10.8)	37 (30.8)	68 (56.7)	13.45**
	2	9 (2.4)	14 (3.7)	53 (14.1)	152 (40.5)	147 (39.2)	
A doctorate is more competitive in the workplace, offering more opportunities for promotion and higher remuneration	1	0 (0)	2 (1.9)	17 (16.2)	38 (36.2)	48 (45.7)	28.42***
	2	17 (4.8)	32 (9.0)	81 (22.8)	146 (41.0)	80 (22.5)	
Being required for the work or by the working institution	1	1 (1.0)	2 (1.9)	11 (10.7)	30 (29.1)	59 (57.3)	27.79***
	2	8 (2.4)	12 (3.6)	66 (19.5)	154 (45.6)	98 (29.0)	
Regard pursuing a doctorate as a new life goal and experience	1	0 (0)	3 (0)	16 (15.5)	31 (30.1)	53 (51.5)	21.88***
	2	8 (2.3)	26 (7.3)	77 (21.8)	144 (40.7)	99 (28.0)	
Being encouraged by the master thesis supervisor	1	8 (8.9)	13 (14.4)	14 (15.6)	25 (27.8)	30 (33.3)	7.86
	2	17 (5.4)	33 (10.5)	71 (22.7)	116 (37.1)	76 (24.3)	
Being encouraged by family and a desire to meet the expectations of others	1	2 (2.2)	7 (7.9)	19 (21.3)	31 (34.8)	30 (33.7)	5.15
	2	18 (5.8)	32 (10.3)	70 (22.6)	117 (37.7)	73 (23.5)	

Note: Group 1: participants in nursing; Group 2: participants in other health-related disciplines

$p^{**}<0.01$; $p^{***}<0.001$

The results were presented in Table 6. Regarding the factor “intrinsic intentions,” for participants in nursing, Model 1 indicated that the longer it had been since their graduation, the more they believed the benefits of studying for a doctorate were high ($\beta=-0.235$; $p<.05$). When satisfaction with doctoral studies and satisfaction with current jobs were factored in, participants employed at universities rated the benefits of studying for a doctorate higher than those outside of university settings ($\beta=-0.215$;

$p<.05$). In addition, the more they were satisfied with their current jobs, the higher they evaluated the benefits of studying for a doctorate ($\beta=0.457$; $p<.001$). For participants in other health-related disciplines, participants employed at universities rated the benefits of studying for a doctorate higher than those outside of university settings ($\beta=-0.094$; $p<.05$). In addition, the more they were satisfied with their doctoral studies ($\beta=0.371$; $p<.001$)

Table 4 Distribution of satisfaction with doctoral studies, current work and doctoral benefits

Group	Very satisfied	Satisfied	Neutral	Unsatisfied	Very unsatisfied	Total
Satisfaction with doctoral studies						
1	59 (44.4)	55 (41.4)	13 (9.8)	5 (3.8)	1 (0.8)	133 (100)
2	106 (24.7)	211 (49.2)	85 (19.8)	16 (3.7)	11 (2.6)	429 (100)
Total	165 (29.4)	266 (47.3)	98 (17.4)	21 (3.7)	12 (2.1)	562 (100)
$\chi^2 = 22.10; p < .001$						
Satisfaction with current jobs						
1	34 (26.0)	63 (48.1)	24 (18.3)	10 (7.6)	0 (0)	131 (100)
2	83 (19.7)	221 (52.5)	85 (20.2)	25 (5.9)	7 (1.7)	421 (100)
Total	117 (21.2)	284 (51.4)	109 (19.7)	35 (6.3)	7 (1.3)	552 (100)
$\chi^2 = 5.02; p = .285$						
Satisfaction with doctoral benefits						
1	74 (55.6)	42 (31.6)	15 (11.3)	2 (1.5)	0 (0)	133 (100)
2	156 (36.4)	173 (40.4)	65 (15.2)	25 (5.8)	9 (2.1)	428 (100)
Total	230 (41.0)	215 (38.3)	80 (14.3)	27 (4.8)	9 (1.6)	561 (100)
$\chi^2 = 19.04; p < .001$						

Note: Group 1: participants in nursing; Group 2: participants in other health-related disciplines

Table 5 Mean differences of satisfaction with doctoral studies, current jobs and doctoral benefits

Variable	Group	N	M.	S.D.	t
Doctoral studies	1	133	1.75	0.84	-3.98***
	2	429	2.10	0.90	
Current jobs	1	131	2.08	0.87	-1.12
	2	421	2.17	0.87	
Doctoral benefits	1	133	1.59	0.75	-4.16***
	2	428	1.97	0.97	

Note: Group 1: participants in nursing; Group 2: participants in other health-related disciplines

*** $p < .001$

and with their current jobs ($\beta = 0.450; p < .001$), the higher they evaluated the benefits of studying for a doctorate.

With regard to the factor “extrinsic influences”, for participants in other health-related disciplines, the more they were satisfied with their doctoral studies ($\beta = 0.255; p < .001$) and with their current jobs ($\beta = 0.249; p < .001$), the higher they evaluated the benefits of studying for a doctorate.

Discussion

Firstly, compared to other health-related disciplines, nursing has been dominated by females. In recent years, the number of male students in nursing has gradually increased in Taiwan [23]. However, there remains considerable room for improvement in narrowing the gender ratio gap within the nursing field. In addition, a high proportion of doctoral graduates in nursing studied part-time, were married, and procreated while studying. Generally speaking, balancing academics, work, and family at the same time is not easy [24]. As such, the importance of social support should be emphasized for doctoral students [25]. Schools, workplaces, and families should

provide as much assistance and consideration as possible in their daily lives.

The primary motivations for pursuing a doctorate appear to be related to individual ideals in other health-related disciplines, while those in nursing seem more practical. Nursing is a highly practice-oriented profession, and this has likely shaped the perspectives of most doctoral students in nursing, who express the practical value of pursuing a doctorate. The concerns of nursing doctoral students are most closely related to their current or future work. In contrast, most doctoral students in other health-related disciplines tend to pursue self-fulfillment. According to the key assumptions of the self-determination theory, the need for growth drives behavior, and autonomous motivation is important [26]. The results of our study indeed reflected that these two assumptions were critical in motivating doctoral students to pursue a doctorate. The nuances were that doctoral students in other health-related disciplines tended to be more intrinsically motivated to pursue a doctorate than those in nursing. There is no superiority or inferiority between intrinsic and extrinsic motivation. What graduate schools can do is guide doctoral students, especially those in nursing, to be curious and interested, to seek out challenges, and to exercise and develop their skills and knowledge [27].

Regardless of the motivations behind participants in nursing pursuing a doctorate, most were satisfied with the benefits of the degree. In contrast, some participants in other health-related disciplines expressed dissatisfaction. Two explanations can be posited for these outcomes. Firstly, the quality of doctoral training in nursing may have been sufficiently high to ensure it was not perceived as a waste of time. Secondly, their post-graduation work experience was not disappointing and may have

Table 6 Factors influencing the benefits perceived of studying for a doctorate

Variable	Group 1		Group 2	
	Model 1	Model 2	Model 3	Model 4
	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)
Intrinsic intentions				
Years passed since graduation	-0.235* (-0.070--0.004)	-0.124 (-0.050-0.011)	-0.066 (-0.31-0.009)	-0.013 (-0.017-0.012)
Whether employed in universities	-0.186 (-0.779-0.050)	-0.215* (-0.779--0.066)	-0.057 (-0.268-0.096)	-0.094* (-0.275--0.012)
Satisfaction with doctoral studies		0.144 (-0.046-0.295)		0.371*** (0.232-0.387)
Satisfaction with current jobs		0.457*** (0.214-0.504)		0.450*** (0.313-0.473)
F	4.857*	11.129***	1.415	69.651***
R ²	0.106	0.358	0.010	0.490
ΔF	4.857*	15.663***	1.415	136.572***
ΔR^2	0.106	0.252	0.010	0.480
Extrinsic influences				
Years passed since graduation	-0.006 (-0.055-0.052)	0.080 (-0.036-0.073)	-0.091 (-0.47-0.007)	-0.042 (-0.034-0.016)
Whether employed in universities	0.026 (-0.524-0.661)	0.002 (-0.562-0.571)	-0.038 (-0.325-0.172)	-0.070 (-0.367--0.085)
Satisfaction with doctoral studies		0.135 (-0.128-0.462)		0.255*** (0.151-0.426)
Satisfaction with current jobs		0.291* (0.078-0.577)		0.249*** (0.151-0.435)
F	0.026	2.628*	1.645	16.541***
R ²	0.001	0.119	0.012	0.194
ΔF	0.026	5.227**	1.645	31.080***
ΔR^2	0.001	0.118	0.012	0.182

Note: Group 1: participants in nursing; Group 2: participants in other health-related disciplines

$p^* < 0.05$; $p^{**} < 0.01$; $p^{***} < 0.001$

even improved. Consequently, graduate schools offering nursing doctoral programs should persist in enhancing the quality of their teaching and research environments to ensure the competitiveness of their doctoral graduates in the labor market.

Most participants in nursing had worked for a period of time before commencing their doctoral studies, and some completed their doctorate part-time. Consequently, although the motivations for pursuing a doctorate vary among individuals, nursing doctoral students tended to be more mentally mature and had clearer goals. In fact, whether doctoral students could make progress was determined mainly by their learning initiatives. Provided that the quality of the teaching and research learning environment was controlled and guaranteed, most active doctoral students would take the initiative to seek their desired learning outcomes and apply what they learned to their career paths. As a result, their satisfaction was higher.

Whether among participants in nursing or other health-related disciplines, and whether their pursuit of a doctorate was driven by intrinsic intentions or extrinsic influences, job satisfaction positively influenced their perceived benefits of studying for a doctorate. According to the expectancy theory, in order to enhance the connection between performance and outcomes, employers and managers should use systems that tie rewards closely to performance [28]. Previous research has indicated that as doctoral graduates' earnings increase, so does their job satisfaction, although this effect is found to a lesser extent

in the higher earnings range [29]. A satisfactory salary is important, but even more crucial is that employers of doctoral graduates establish reasonable goals and a comprehensive reward system. Since extrinsic rewards may not satisfy all employees, employers should emphasize and effectively utilize intrinsic rewards, which employees derive from engaging in meaningful work and performing it well. For instance, employers should grant doctoral employees greater autonomy, empower them to achieve self-fulfillment and purpose-driven work, foster social interaction among them, offer opportunities for career advancement, and invest in their learning, development, and well-being [30].

For nursing participants and from intrinsic intentions, the time elapsed since graduation and employment status at universities probably influenced their evaluation of the benefits of their doctorate. This result is consistent with a previous study that revealed graduates' perceptions of doctoral value fluctuated but increased over time from the point of graduation [31]. Over time, doctoral graduates may miss their past student life. They wish to express their gratitude to those who helped them during their doctoral studies, despite the period possibly being exhausting and stressful. Moreover, the goal of doctoral training is to cultivate students with the skills to analyze and solve professional problems. When doctoral graduates face challenges in the workplace after graduation, they may deeply appreciate the value of these skills and subsequently offer a positive assessment of their doctoral training. Moreover, since a doctorate is typically the

minimum requirement for most scientific research and teaching roles at universities, it follows that if doctors are employed in settings outside of academia, they may often feel overqualified. Consequently, professionals in academic institutions tend to have a more favorable assessment of the advantages conferred by doctoral degrees. Regarding this matter, it is undoubtedly best for doctorate holders to apply their knowledge and fully utilize their strengths. Even if they have not secured corresponding positions or treatment, they need not be depressed. After all, they still have academic growth during the process of studying for doctoral degrees.

Limitations

This study has several limitations that future research could aim to amend. For instance, although the secondary data used was convenient to access, it was also restrictive. On the one hand, the questionnaire was well developed and competently executed by official agencies, allowing the public direct access to the data. On the other hand, the researchers were unable to design questions according to their specific needs, and had to consider how well the existing items in the questionnaire could address the research questions. In the future, researchers might revise and refine a more specific questionnaire on this topic. Next, this study extracted samples from nursing and other health-related disciplines from a large-scale survey of doctoral graduates from all fields. In other words, this study is merely an exploratory and cross-sectional one, as the number of samples participating in the survey is limited. Future studies might distribute questionnaires directly to doctoral graduates in nursing and other health-related disciplines to increase the sample sizes. Moreover, when it comes to research topics concerning nursing doctorate holders, conducting large-scale surveys is indeed quite challenging due to difficulties in securing samples. Future researchers might consider conducting more in-depth studies on the nursing doctorate holders population through interviews.

Conclusion

The findings offer an overview of the motivations behind pursuing a doctorate in nursing and other health-related disciplines. By evaluating the perceived benefits of completing a doctorate, we have gained insight into whether these motivations were fulfilled. Nursing, being a practical-oriented field, has likely influenced nursing doctoral graduates in expressing the practical value of pursuing a doctorate. Regardless of their initial motivations, a larger percentage of nursing participants found the pursuit of a doctorate worthwhile or very worthwhile. Furthermore, when considering overall satisfaction with doctoral studies and the perceived benefits of a doctorate, the proportion of participants in nursing who expressed being very

satisfied was higher than in other health-related fields. These findings underscore the importance of providing doctoral students with sufficient social support to overcome the challenges they face during their doctoral journey, and enhancing the quality of both teaching and research environments in graduate schools to attract and satisfy doctoral nursing talents.

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Author contributions

Y.T. conducted the primary literature review, data analysis and half of the writing of the manuscript. J.H. provided literature, half of the writing and proofreading. All authors have read and agreed to the published version of the manuscript.

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Data availability

The datasets generated by the survey research during and/or analyzed during the current study are available in the Survey Research Data Archive, Academia Sinica, Taiwan, <https://doi.org/10.6141/TW-SRDA-D00169-1>.

Declarations

Ethical approval

The study was approved by the School of Political Science and Public Administration, Wuhan University, China. All the methods were performed in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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