

▪ **Basic Research**

**Nursing Career Ladder System: Effect on Professional Development Among Staff Nurses**

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**Abstract**

**Background:** Nursing career ladders are effective processes that allow nurses understand how to advance by providing them with goals and action plans that improve professional nursing practice. By doing this, nurses have a validated path goals to success and be recognized nursing leaders. It also affects quality and productivity of clinical nursing practice, incentives, rewards and promotion systems. **Aim of the study:** Assessing nursing career ladder system program effect on professional development among staff nurses. **Design:** A quasi-experimental research design with one group pretest and posttest. **Subjects:** The subjects of the study included 172 out from 310 staff nurses working at Ain Shams University hospital. **Setting:** The study was performed at Ain Shams Hospital which is affiliated to Ain Shams University hospitals. **Tools of data collection:** Three tools used for data collection namely: Knowledge Questionnaire, Career Ladder System Scale, and Professional Development Short scale (PDSS). **Results:** After implementing the program, there was a highly statistically significant improvement in career ladder knowledge, perception levels ( $p=0.001$ ) and professional development levels among staff nurses. The study also identified a highly statistically significant relationship between nurses' knowledge and career ladder perception ( $p=0.001$ ) and professional development ( $p=0.03$ ) after program implementation. Furthermore, career ladder system program had a positive effect on professional development among staff nurses. **Conclusion:** the result revealed that nursing career ladder system program had a positive effect on professional development among staff nurses. **Recommendations:** Conducting comparative studies between governmental and non-governmental hospitals about career ladder system implementation and outcomes to increase the overall perception about it.

**Key words:** Career ladder, Professional Development.

## Introduction

Nurses play a vital role in providing healthcare (Sandehang et al., 2019). Therefore, nurses are expected to demonstrate excellent professional skills to enhance the quality of nursing services (Saputri et al., 2021). Healthcare organizations must take a proactive approach to retaining and developing nurses' careers. A nurse's career stage is based on performance, professionalism, and clinical competency. Nurses must prioritize continued competency and nursing leaders should help facilitate this process development. Competence and professionalism can be fostered through structured career development initiatives (Sandehang et al., 2019).

Career development require nurses to exploit personal and professional opportunities to achieve nursing professional plans that is approved by their work organization. Career development is a significant opportunity for professional and educational development in an organization. Nursing career development systems have been developed and implemented in various countries such as the United States, Norway, China, Thailand, Japan, and others countries. Career development, therefore, can be carried out through a career ladder (Saputri et al., 2021).

The clinical ladder is a structured system to provide nurses' career advancement while providing direct patient care in their current clinical setting. Career ladder encompasses a well-planned, designed, informed programs that assist professional nurses' step forward acquiring new knowledge and skills according to organizational hierarchy (Sleem & Kassem, 2016).

Formal and informal nursing training and education that aims to ensure quality nursing practice is supported by career ladder programs in healthcare organizations. (Zehler et al., 2015). The hospitals which implement a good career path will attain many long-term benefits. Career ladder pathway empowers and compensate nurses to support their professional competencies (Maejima et al., 2021).

The implementation of the clinical nurse career ladder system has an impact on improving retention, performance, satisfaction of nurses, quality of care, boosts self-efficacy, organizational commitment, fosters autonomy, improves nursing capabilities and decreases absenteeism, turnover rates among nurses (Felani et al., 2019). Additionally, career ladder systems supported career advancement, coaching, a reward system, education progress and awareness of responsibilities (Pertiwi & Hariyati, 2019).

Clinical ladder system is used to recognize professional development and differentiate between different levels of nursing care and expertise (Coleman and Desai, 2019). The clinical level encourages and maintains professional development and practices of nursing (Saputri et al., 2021). Ongoing professional growth should be a key focus for nursing and is often a fundamental aspect of advancing within clinical ladder programs (Hariyati et al., 2017). Healthcare institutions that prioritize investment in nursing professional development experience enhancement, stability, and a hopeful outlook for the future. Certain healthcare facilities provide a formal clinical ladder advancement program to motivate nurses to pursue professional growth (Stancell, 2022).

A supportive institutional culture needs to be established that promotes professional development. By fostering and expanding professional development opportunities for nurses, organizations can create a positive workplace atmosphere and may improve nurse retention rates (Brummett, 2024). This cultivated culture guarantees that a nurse's competencies and expertise remain up-to-date and applicable. Besides a clinical ladder program not only does benefit the nurses by increasing their pay, but it benefits the hospital and the patients by providing them with quality care and result in professional development among nurses (Coleman and Desai, 2019).

Nurse leaders concur that professional growth and the advancement within clinical ladder programs play a beneficial role in enhancing the quality of patient care and are essential to fortifying the nursing workforce (Adeniran et al., 2015). Such a career ladder initiative provides nurses with the chance to ascend to roles such as nurse manager, nurse educator, and nurse researcher, serving as a promotional framework from the clinical pathway. (Ko & Yu, 2014) indicated that career ladder programs can elevate the status of nurses, thereby improving their positions within the leadership and management structures. This initiative holds significant importance in achieving pathways to nursing leadership roles (Drenkard and Swartwout, 2005).

Skilled nurses exhibit assurance in their decision-making processes and pursue excellence in nursing (James, 2018). Additionally, ongoing professional development is essential for keeping employees well-trained, knowledgeable, and enthusiastic, no matter their job roles (Kruger and Pienaar, 2020).

### **Significance of the study**

Despite the recognized benefits of nursing career ladder systems in promoting professional development, they remain underutilized and misunderstood in many healthcare settings, including Ain Shams University Hospital. A copious number of studies in Egypt have shown that nurses often exhibit low to moderate levels of professional development, which negatively impacts the quality of care provided to patients. Although clinical ladder has been seen as an important element in nursing, little attention has been paid to it, and the number of researches done in Egypt specifically in this area has been remarkably limited.

When the researchers contacted with nurses at Ain Shams University Hospital, they found that, nurses often have limited promotional opportunities, lack incentive to motivate professional growth, and are hindered by insufficient learning and educational resources. Also, many of nurses see the nursing as a job not a career leading to low competence, productivity, and job dissatisfaction. Additionally, the absence of updated knowledge from recent research further undermines patient care quality. These challenges highlight the need for structured implementation of career ladder system program to enhance professional development, at Ain Shams University Hospital.

### **Aim of the Study:**

This study aimed to identify the effect of nursing career ladder system on professional development among staff nurses through, assessing knowledge of nursing career ladder system among staff nurses, assessing perception level of nursing career ladder system among staff nurses (pre-post-follow up), assessing level of professional development among staff nurses (pre-post- follow up) and assessing the effect of nursing career ladder system on professional development among staff nurses.

### **Research hypothesis:**

Implementation of nursing career ladder system program will improve professional development among staff nurses.

### **Subjects and Methods:**

#### **A- Research design:**

A quasi-experimental research design with one group pretest and posttest was utilized in this study to establish a cause-and-effect relationship between an independent and dependent variable (Thomas, 2024).

#### **Setting:**

The study was conducted at Ain Shams Hospital which is affiliated to Ain Shams University hospitals. It provides general and medical services, and it consists of six floors which includes (immunology and allergic diseases, tropical medicine, endocrinology, chest diseases and intensive care units). The study was conducted in all hospital units, where the rate of hospital readmissions was 618 beds.

**Subject:**

- Subjects of the study included 172 out of 310 staff nurses in the aforementioned study setting. This sample was selected by simple random sampling technique.
- The sample size was calculated based on this equation.

$$n = \frac{N \times p(1 - p)}{[N - 1 \times (d^2 \div Z^2) + p(1 - p)]}$$

(Thompson, 2012)

n= sample size      d= error level 5%  
 N= total size      p= 0.5  
 Z= 1.96

**Sampling technique:**

A simple random sampling technique used to conduct this study.

**D-Tool of data collection:**

Three instruments were used to gather the data for this study, specifically: Knowledge Questionnaire, Career Ladder System Scale, and Professional Development Short scale (PDSS).

**Tool I: Staff Nurses Knowledge Questionnaire**

This questionnaire was developed by the researcher based on relevant literature **Maejima et al. (2021), Coleman & Desai, (2019), and Felani et al.,( 2019)**. It aimed to assess knowledge of nursing career ladder system among staff nurses. It included two parts:

**Part I:** Nurse' personal characteristics data were included (age, gender, marital status, and years of experience in nursing, position, current work place and having heard about career ladder system).

**Part II:** It was consisted of multiple-choice questions (MCQ) covering the following items concept, benefits, levels, skills and responsibility and accountability in nursing practice of career ladder system.

**Scoring system**

The questions were scored as one point for the correct answer and zero for the incorrect answer. Based on 50% cut of value, the nursing staff responses were considered satisfactory knowledge ( $\geq 60\%$ ) and unsatisfactory knowledge ( $<60\%$ ). **Maejima et al. (2021)**.

**Tool II: Career Ladder System Scale**

This tool aimed to assess nurse ' perception of nursing career ladder system. This scale developed by **Park & Lee, (2010)** and will be adapted by the researchers based on **Ahn & Choi, (2023)**. It included (26) items divided into four dimensions namely; general understanding (8) items(I know how to apply to clinical advancement), perception of participation in professional activities (4) items (I participate in the development of educational material for parent), perception of expected outcomes (10) items( The qualification of career ladder system enables nurse to improve the quality of care and implement research), and experience of advanced career( 4 ) items (Participation in career ladder system leads to improve the outcome of nursing which was resulted from my project of career management ) .

**Scoring system:**

Nurse ' responses were scored on a two-point Likert scale as follows, 1-5 scale. (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree). Total score was categorized

according to the statistical cut-off point into high perception level was >75%, moderate perception level was 60%, and low perception level was <60%. **Park & Lee, (2010)**

### **Tool III: Professional Development Short Scale (PDSS)**

This scale was adapted from **Mourão et al. (2022)** based on **Mourão et al. (2014)**, it aimed to assess professional development levels, and it was consisted of 8 items (I have everything necessary for the completion of my work skills), (With my current knowledge, I can do my job satisfactorily). etc.

**Scoring system.** Items were scored on seven -point Likert scale as follows where (7) represented strongly agreed and (1) represented strongly disagree, respectively. Total score was categorized according to the statistical cut-off point into high level was >75%, moderate level was 60%, and low level was <60%. **Mourão et al. (2022)**

### **Tools validity and reliability**

The jury group was shown the initial version of the data collection tools for face and content validation. Seven nursing administration specialists from various nursing faculties (Ain Shams University and Cairo University) made up the jury. Their general or overall opinion regarding the data collection tools was part of the process. Clarity, comprehensiveness, simplicity, comprehension, and applicability were evaluated for the tool. The researchers made changes such as rewording and adding/omitting based on the jury group's opinions. Cronbach's alpha was used to evaluate the instruments' internal consistency. The Professional Development Short scale (PDSS) scored 91, the Career Ladder System Scale scored 92, and the Knowledge Questionnaire scored 89.

### **Pilot Study:**

Before beginning data collection, a pilot study was conducted following tool development and modification. Before starting the data collection, 18 nurses, or 10% of the main study sample, were chosen at random from each group to participate in the pilot study. The purpose of the pilot was to evaluate the tools' viability, applicability, practicability, and linguistic clarity. Estimating the amount of time required to finish the data collection forms was also beneficial. The tools were left unchanged. The primary study sample contained the pilot sample.

### **Field Work:**

The study will be conducted through the following four phases:

#### **Phase I (preliminary)**

This phase lasted for one month in March 2024. During this phase, data collection tools were finalized based on feedback from the pilot study. Researchers distributed questionnaires to nurses who consented to participate. Before the program started, nurses who consented to participate in the study were given the questionnaire forms at work. The nurses under study were split up into three groups by the researchers, each consisting of 57–58 nurses. The program's date and location were coordinated by the hospital director and the researchers. The morning shifts were scheduled for three days a week, with one session per group. The researchers were on hand to respond to inquiries and clear up any misunderstandings regarding the data. When they were done, the researchers went over the sheets to make sure everything was complete. The questionnaire took 20 to 30 minutes to complete for each person. Immediately following the program, the same approach was taken. The filled-out forms were returned.

#### **Phase II (program planning)**

This phase around one month in April 2024. After finishing the data collection during the assessment phase, we analyzed the information. During planning phase, program content was developed using evidence-based literature, including textbooks, scientific articles, and pretest

results. The program's theoretical and practical components were designed to fill in the knowledge and perception gaps that had been found. To meet the needs of the participants and accomplish the goals and topics of the training program, various teaching techniques were chosen. It was aimed at providing participants with as much experience as possible. The nursing director collaborated with researchers and provided necessary support to set the program sessions in development and training center inside the hospital. The program schedule prepared accordingly. The program's primary objective was determined, a plan was developed, and the specifics were described.

### **Phase III (program implementation)**

This phase lasted for two months, from May 2024 to June 2024. The program spanned 20 hours over five weeks, comprising seven sessions (five theoretical and two practical). Each session lasted 2–3 hours, with one session conducted per group weekly. The researcher clarifying to the study participants what the training program is indicated for, its goals, how it will be organized, career ladder overview, second session talked about (Development of mentorship), third session (Career Advancement), fourth session (Establish an effective reward system), fifth session (Skill and education development), sixth session (Awareness of duty), Finally the seventh session (conclusion and feedback).

Researchers began each session by outlining the purpose of the meeting and the goals they hoped to accomplish. Following each session, participants provided the researchers with feedback regarding the topics discussed.

In the program, various teaching techniques were employed. These included case-based learning, role-playing activities, small group discussions, and real-world examples from everyday life and the workplace. Strong relationships were formed between the researcher and the nurses, who were encouraged to participate in and share program activities. Data shows and computers were used as audio-visual tools. Handouts with a summary of the session's contents were given to the participants. All staff nurses, the nursing director, and the head of the nursing department received this reminder handout.

### **Phase IV (post program evaluation)**

This phase lasted one month at July 2024. A post-test was conducted immediately after the program's completion using the same tools as in the pretest phase. The effectiveness of the program was evaluated by comparing pretest and posttest results to measure improvements in knowledge, perception, and professional development levels.

### **Phase V (Follow-up)**

Through October 2024, this phase lasted for one month. Three months after the post-program evaluation phase, a follow-up test was administered using the same instruments as before in order to reevaluate the program's impact. The data collection process was used in this phase in the same manner as it was in the assessment and post-program evaluation phases.

### **Administrative Design:**

An official letter was sent by the Ain-Shams University Faculty of Nursing to the hospital director requesting permission to gather data for the study. After that, the researchers met with each of these directors to inform them of the study's goal and to ask for their cooperation.

### **Ethical Considerations:**

Prior to starting the study, ethical approval was obtained from the Faculty of Nursing ethical committee. The study's goals and objectives were explained to the staff nurses who participated by the researchers. The confidentiality and anonymity of the subjects' data were guaranteed by the researchers. Staff nurses were made aware that they could leave the study at any moment, for any reason, and without incurring any fees.

**Statistical Design:**

The statistical software program SPSS 24.0 was used for data entry and statistical analysis. Descriptive statistics were used to display the data, with means and standard deviations for quantitative variables and frequencies and percentages for qualitative variables. To determine the relationship between quantitative variables, the chi-square test was employed. A p-value of less than 0.05 was deemed statistically significant, and a p-value of less than 0.01 was deemed highly statistically significant.

**Results:**

**Table 1** illustrates that more than half 58.1% of the studied nurses were less than 35 years old, 59.3% were females, 56.4% were married, 36% have less than 10 years of experience in nursing, 62.2% were worked at non critical care units. Finally, 71% of the studied nurse had not previous hearing about career ladder system before the current study.

**Table 2** demonstrates that nurses' knowledge increased significantly after the program was implemented, going from 8.7% to 93%, and that this improvement persisted at follow-up (90.1%). This suggests that nurses' knowledge improved in a highly statistically significant way after the program was implemented as opposed to before it was developed. Also, there was a highly statistically significant improvement in nurses' knowledge at follow up of the program compared with pre-program implementation.

**Table 3** shows the changes in the score of nurse perception of career ladder system, which was the lowest percentage before development of program for the "experience of advanced career dimension". This percentage increased to 98.3% after-implementing the program indicating a highly statistically significant improvement in nurses' perception level ( $p < 0.001$ ). Also, there was a highly statistically significant improvement in nurses' perception level at follow up of the program compared with pre-program implementation.

**Table 4** shows changes in the score of nurse professional development level, which was the lowest percentage before the program for the item of "I have had a significant professional development since I started working". This percentage increased to 96.5% after-implementing the program indicating a highly statistically significant improvement in nurses' professional development level ( $p < 0.001$ ). Also, there was a highly statistically significant improvement in nurses' professional development level at follow up of the program compared with pre-program implementation.

**Table 5** elaborates that there was a highly statistically significant relationship between the nurses' career ladder system knowledge level and their perception level regarding career ladder after implementing the program ( $P = 0.001^{**}$ ). In addition, there was a highly statistically significant relationship between the studied nurse career ladder system knowledge and their perception level at follow up ( $P = 0.001^{**}$ ).

**Table 6** elaborates that there was a statistically significant relationship between staff nurses' knowledge level with their professional development level after implementation of the program ( $P = 0.03$ ). Also, there was a highly statistically significant relationship between the studied nurse career ladder system knowledge and their professional development level at follow up of the program ( $P = 0.001^{**}$ ).

**Table 7** elaborates that there was a highly statistically significant relationship between the studied nurse perception of career ladder system with their professional development after the implementation of the program ( $P = 0.00^{**}$ ). Also, there was a highly statistically significant relationship between the studied nurse perception of career ladder system with their professional development at follow up of the program ( $P = 0.00^{**}$ ).

**Table (1): Personal characteristics of the studied subject(n=172)**

<b>Nurses' personal characteristics data</b>	<b>N</b>	<b>%</b>
<b>Age:</b>		
< 35 years	<b>100</b>	<b>58.1</b>
≥35 years	<b>72</b>	<b>41.9</b>
<b>Mean± SD</b>	<b>33±61</b>	
<b>Gender:</b>		
Male	<b>70</b>	<b>40.7</b>
Female	<b>102</b>	<b>59.3</b>
<b>Marital status:</b>		
Unmarried	<b>75</b>	<b>43.6</b>
Married	<b>97</b>	<b>56.4</b>
<b>Years of experiences in nursing:</b>		
≥10 years	<b>62</b>	<b>36</b>
10-15 years	<b>60</b>	<b>35</b>
>15 years	<b>50</b>	<b>29</b>
<b>Current workplace:</b>		
Critical care unit	<b>65</b>	<b>37.8</b>
Non critical care unit	<b>107</b>	<b>62.2</b>
<b>Previous hearing about career ladder system:</b>		
Yes	<b>50</b>	<b>29</b>
No	<b>122</b>	<b>71</b>



**Table (2): knowledge of nursing career ladder system among staff nurses before- after implementing program (n=172).**

Dimensions	Time\ satisfactory knowledge ( $\geq 60\%$ )						Pre -post		Pre-Follow up	
	Before implementing program		After implementing program		Follow up		$\chi^2$	P	$\chi^2$	P
	N	%	N	%	N	%				
Concepts of nursing career ladder	15	8.7	150	87.2	149	86.6	86.43	0.00**	84.51	0.00**
Benefits and Impact of the Career Ladder System	12	7	166	96.5	160	93	78.85	0.00**	75.81	0.00**
Levels of career ladder system	18	10.5	167	97	161	93.6	84.74	0.00**	80.83	0.00**
Skills, responsibility, and accountability in nursing practice	10	5.8	149	86.6	146	84.9	77.83	0.00**	72.76	0.00**
Career Ladder Requirements	22	12.8	164	95.3	159	92.4	75.65	0.00**	73.64	0.00**
<b>Total knowledge</b>	<b>15</b>	<b>8.7</b>	<b>160</b>	<b>93</b>	<b>155</b>	<b>90.1</b>	<b>79.25</b>	<b>0.00**</b>	<b>75.11</b>	<b>0.00**</b>

[\*\*] Highly statistically significant  $p < 0.001$

**Table (3): Nurses' perception level of nursing career ladder system before- after implementing program (n=172).**

Career ladder system Dimensions	Time / high perception level ( $>75\%$ )						Pre -post		Pre-Follow up	
	Before implementing program		After implementing program		Follow up		$\chi^2$	P	$\chi^2$	P
	N	%	N	%	N	%				
General understanding	19	11	155	90.1	150	87.2	37.80	0.00**	36.50	0.00**
Perception of participation in professional activities	22	13	158	91.2	151	87.8	53.28	0.00**	51.56	0.00**
Perception of expected outcomes	17	9.9	168	97.7	160	93	72.67	0.001**	70.36	0.001**
Experience of advanced career	10	5.8	169	98.3	162	94.2	88.32	0.04*	84.11	0.00**
<b>Total perception level</b>	<b>17</b>	<b>9.9</b>	<b>163</b>	<b>94.8</b>	<b>157</b>	<b>91.3</b>	<b>46.14</b>	<b>0.00**</b>	<b>44.67</b>	<b>0.00**</b>

[\*\*] Highly statistically significant  $p < 0.001$

[\*] statistically significant  $p < 0.005$

**Table (4): Professional development among staff nurses before- after implementing program (n=172).**

Professional development items	Time/high level (>75%)						Pre-post		Pre-Follow up	
	Before implementing program		After implementing program		Follow up		$\chi^2$	P	$\chi^2$	P
	N	%	N	%	N	%				
1- Everything I need to finish my work skills is provided here.	12	7	163	94.8	155	90.1	32.42	0.00**	30.12	0.00**
2- My manager has already complimented me on my professional growth.	18	10.5	160	93	156	90.7	90.36	0.03*	88.80	0.03*
3- Since I started working, my professional development has significantly increased.	10	5.8	166	96.5	160	93	65.23	0.00**	63.700	0.00**
4- I believe that my professional performance has improved.	14	8.1	161	93.6	159	92.4	77.32	0.00*	72.55	0.00*
5- My coworkers laud my career development.	20	11.6	159	92.4	157	91.3	56.14	0.00**	56.54	0.00**
6- With what I currently know, I can perform my job effectively.	15	8.7	160	93	154	89.5	46.847	.000**	44.367	.000**
7- I've improved my professional qualifications.	13	7.6	165	95.9	161	93.6	55.744	.000**	53.987	.000**
8- I feel ready right now to engage in activities that are intended for me.	11	6.4	157	91.3	152	88.4	70.321	.000**	68.356	.000**
<b>Total professional development level</b>	<b>14</b>	<b>8.1</b>	<b>161</b>	<b>93.6</b>	<b>156</b>	<b>90.7</b>	<b>68.232</b>	<b>.000**</b>	<b>66.932</b>	<b>.000**</b>

[\*\*] Highly statistically significant  $p < 0.001$

**Table (5): Relation between staff nurse knowledge level and perception level of career ladder (n = 172)**

Perception level of career ladder	Total Knowledge level											
	Before implementing program				After implementing program				Follow up			
	Unsatisfactory (N=157)		Satisfactory (N=15)		Unsatisfactory (N=12)		Satisfactory (N=160)		Unsatisfactory (N=17)		Satisfactory (N=155)	
	N	%	N	%	N	%	N	%	N	%	N	%
Low	150	95.5	1	6.7	1	8.3	2	1.3	8	47	2	1.3
Moderate	3	1.9	1	6.7	5	41.7	1	0.6	2	11.8	3	1.9
High	4	2.6	13	86.6	6	50	157	98.1	7	41.2	150	96.8
Test of significance	(X <sup>2</sup> )=1.021 (P)= -0.207				(X <sup>2</sup> )=46.301 (P)= 0.001**				(X <sup>2</sup> )=38.701 (P)= 0.001**			

[\*\*] Highly statistically significant  $p < 0.001$

**Table (6): Relation between nurse knowledge level of career ladder system and their professional development level (n = 172).**

Professional development level	Total Knowledge level											
	Before implementing program				After implementing program				Follow up			
	Unsatisfactory (N=157)		Satisfactory (N=15)		Unsatisfactory (N=12)		Satisfactory (N=160)		Unsatisfactory (N=17)		Satisfactory (N=155)	
	N	%	N	%	N	%	N	%	N	%	N	%
Low	144	91.7	8	53.3	1	8.3	2	1.3	10	58.8	1	0.6
Moderate	4	2.6	2	13.3	1	8.3	7	4.4	0	0	5	3.2
High	9	5.7	5	33.4	10	83.4	151	94.5	7	41.2	149	96.2
Test of significance	(X <sup>2</sup> )=1.230 (P)= -0.721				(X <sup>2</sup> )=79.591 (P)= 0.03*				(X <sup>2</sup> )=67.591 (P)= 0.01*			

[\*] statistically significant  $p < 0.001$

**Table (7): Relation between nurse perception level of career ladder system and their professional development level (n = 172).**

Professional development level	Total perception level of career ladder system																		
	Before implementing program						After implementing program						Follow up						
	Low (N=151)		Moderate (N=4)		High (N=17)		Low (N=4)		Moderate (N=5)		High (N=163)		Low (N=10)		Moderate (N=5)		High (N=157)		
	N	%	%		N	%	N	%	N	%	N	%	No	%	No	%	No	%	
Low	134	88.7	1	25	13	76.4	2	50	3	60	2	1.2	3	30	1	20	3	1.9	
Moderate	5	3.3	1	25	2	11.8	1	25	1	20	2	1.2	4	40	1	20	4	2.5	
High	12	8	2	50	2	11.8	1	25	1	20	159	97.6	3	30	3	60	150	95.6	
Test of significance	(X2) =1.956 (P)= -0.611						(X2) =80.531 (P)= 0.00**						(X2) =73.547 (P)= 0.00**						

[\*\*] Highly statistically significant  $p < 0.001$

## Discussion

Finding out how the nursing career ladder system affects staff nurses' professional development was the aim of this study through the following objectives: assessing knowledge of nursing career ladder system among staff nurses, assessing perception of nursing career ladder system among staff nurses before and after the program, assessing level of professional development among staff nurses before and after the program and assessing the effect of nursing career ladder system on professional development among staff nurses.

Regarding nurses' knowledge related to career ladder system before and after implementing program table 2, illustrated that; the staff nurses had unsatisfactory knowledge level regarding career ladder system before implementing the program. This may be due to not attending any career ladder system programs at Ain Shams university hospital about the benefits, skills, responsibility and accountability in nursing practice of career ladder system and how it contributes to advance their career and provide opportunities for improvement within the nursing profession. So, the nurses who did not attend previous training program in career ladder system, will have scarce information about it.

In addition, table 2 underscores a highly statistically significant improvement in nurses' knowledge level post-program implementation. The shift in total knowledge (from 8.7% to 93%) aligns with Atefi et al. (2020) and Valizadeh et al. (2019) who reported that career ladder education enhances nurses' understanding of career progression and the associated benefits, thereby empowering them to pursue higher roles. While Duchscher & Cowin (2020) emphasize that such knowledge empowers nurses to set realistic career goals.

The dramatic improvement underscores the effectiveness of structured educational interventions. Nurses often lack formal training on professional growth systems, relying instead on ad hoc learning or peer experiences. Implementing a structured program fills these gaps by providing clear, accessible information. However, El-Hamadi & Saleh (2021) contend that knowledge alone is insufficient without accompanying institutional support, such as transparent evaluation criteria.

The sustained improvement at follow-up highlights the importance of reinforcement strategies to ensure long-term knowledge retention. This aligns with El-Hamadi & Saleh (2021), who emphasize that periodic re-education and reminders help solidify learning over time. Similarly, Atefi et al. (2020) suggest that revisiting training content in follow-up sessions can bridge potential knowledge gaps and maintain staff engagement.

However, Wong et al. (2019) argue that knowledge alone may not suffice to drive continued engagement unless it is paired with ongoing institutional initiatives that integrate the learned concepts into daily practice.

Regarding perception of Career Ladder System, table 3 shows a highly statistically significant increase in the perception levels after implementing the program, particularly in areas such as "experience of advanced career". This Positive perception changes may be due to the reflection of the program's ability to address misconceptions and highlight tangible benefits of career advancement. Pre-program perceptions were low due to unfamiliarity and skepticism about the system's fairness or accessibility. The program likely clarified the criteria, processes, and outcomes, fostering trust and confidence.

Improved perceptions are also linked to a sense of inclusion and recognition. When nurses perceive themselves as stakeholders in their professional development, their engagement and optimism about the system increase. Lee et al. (2021) agreed with present research findings,

stating that nurses are more likely to engage with systems they perceive as fair and beneficial. However, Hewlett et al. (2020) note that perception improvements can be transient if programs are not sustained with tangible outcomes like promotions or salary increases.

On same line, Valizadeh et al. (2019), in their study indicated that perceptions of career advancement systems improve when staff understand how the system aligns with professional growth and recognition.

Perception levels at follow-up (91.3%) showed a slight decline from post-program scores (94.8%), though they remained significantly higher than pre-program levels.

The slight decline in perception at follow-up is consistent with findings by Hewlett et al. (2020), who note that perception improvements may decline over time if tangible benefits, such as career advancement or rewards, are not realized. Conversely, Lee et al. (2021) emphasize that follow-up evaluations provide an opportunity to address such concerns and reinforce positive perceptions by showcasing success stories and addressing staff feedback.

Career ladder programs provide structured opportunities for skill enhancement, fostering confidence and preparedness. Professional growth is further supported by the system's focus on accountability and skill refinement, which encourages nurses to take initiative and set career goals. The dramatic improvement reflects how career ladder systems can transform professional inertia into proactive engagement.

Professional development levels increased markedly with highly statistically significant difference and showed improvements after program implementation compared with pre-program as indicated in table 4. Items like "I have had significant professional development since I started working" rising from 5.8% to 96.5%. such improvement may return to that the career ladder systems provide structured pathways for professional development, enabling nurses to see tangible effects on skill enhancement and confidence This fosters a sense of accomplishment and professional identity.

This came in agreement with Harrison et al. (2022) who corroborate that such systems directly impact professional growth. Rafferty et al. (2021), however, argue that development can stagnate if career ladder milestones are not tied to consistent mentorship. Lee et al. (2021) found that participation in such systems leads to greater self-efficacy, job satisfaction, and retention.

The follow-up results reaffirm the program's lasting impact on professional development. Harrison et al. (2022) argue that consistent professional growth requires a structured framework combined with mentorship and feedback loops. The observed slight decline at follow-up, however, may indicate the need for additional measures to sustain engagement, such as periodic workshops or recognition events, as suggested by Rafferty et al. (2021).

Regarding the relationship between staff nurses' knowledge and their perception of career ladder system in table 5, a highly statistically significant relationship ( $p=0.001$ ) was observed post-program, demonstrating that increased knowledge correlates with improved perceptions. In addition, the strong correlation between knowledge and perception was maintained at follow-up, with highly significant results ( $p=0.001$ ).

From the researcher point of view, knowledge empowers nurses to understand the benefits and opportunities provided by the career ladder system, dispelling doubts and uncertainties. When nurses have a clear understanding of how the system works and how they can benefit, their perception naturally shifts positively. Also, informed nurses are better equipped to appreciate and engage with career advancement opportunities.

Duchscher & Cowin (2020) agree that knowledge is a critical driver of positive perceptions and understanding career pathways motivates staff to engage actively in professional development opportunities. On the other hand, Wong et al. (2019) suggest that knowledge does

not always translate into favorable perceptions, particularly in hierarchical organizations where career advancement feels inaccessible.

The follow-up findings validate that increased knowledge continues to drive positive perceptions over time. These findings highlight the need for periodic updates and engagement initiatives to ensure that the relationship between knowledge and perception remains strong. Follow-up sessions can be used to reinforce this link by providing updates on program successes and addressing staff concerns.

This supports Duchscher & Cowin (2020), who emphasize that informed staff are better equipped to appreciate the benefits of career ladder systems. However, Wong et al. (2019) caution that in the absence of visible outcomes, the relationship between knowledge and perception may weaken over time.

Regarding the relationship between staff nurses' knowledge and professional development, they were significantly related post-program ( $p=0.03$ ) and was maintained at follow-up indicating that, informed nurses experienced greater professional growth. This may be due to, nurses who understand the system are better equipped to navigate and utilize its opportunities, leading to tangible professional growth. This reflects Benner's Novice to Expert Model, where knowledge acquisition is a prerequisite for advancing through the stages of clinical competence. Without foundational knowledge, professional growth remains limited to experiential learning, which is slower and less structured.

This finding aligns with Atefi et al. (2020) and Benner's Model, which both stress the centrality of knowledge in career progression. However, Hewlett et al. (2020) argue that without structural and managerial support, even knowledgeable nurses may find it challenging to achieve professional growth.

The findings in the table 7 demonstrate a highly statistically significant improvement in nurses' professional development following the implementation of the career ladder system with strong correlation between perception and professional development that extended to remain significant at follow-up ( $p<0.001$ ). This positive effect is evidenced by the substantial increase in scores related to professional growth indicators, such as confidence in job performance, acquisition of advanced skills, and readiness to undertake complex roles. For instance, the percentage of nurses reporting significant professional development rose from 5.8% before the program to 96.5% after its implementation ( $p < 0.001$ ).

These results align with the principles of structured professional pathways, which provide clear criteria and opportunities for career progression. Studies by Atefi et al. (2020) and Harrison et al. (2022) corroborate these findings, highlighting that career ladder systems not only enhance technical competencies but also foster a sense of accomplishment and motivation among nurses. This underscores the importance of integrating career advancement frameworks into organizational policies to promote continuous professional development and elevate the overall quality of nursing practice.

## Conclusion

The findings highlight that after program implementation there was a highly statistically significant difference compared with pre program implementation in total knowledge, career ladder perception level and professional development level. Also, career ladder program had a positive effect on professional development.

By equipping staff nurses with the necessary knowledge and skills, such programs foster professional development, improve job satisfaction, and contribute to a well-prepared nursing workforce. These outcomes underscore the value of structured frameworks in nursing practice and their potential to address career advancement challenges.

## Recommendations

### The result of this study projected the following recommendations:

1. Conduct comparative studies between governmental and non-governmental hospitals about career ladder system implementation and outcomes to raise the overall perception about it.
2. Establish ongoing training initiatives to educate nurses about the career ladder system, its benefits, and implementation processes.
3. Include career ladder systems as a criterion in hospital accreditation processes to emphasize their importance in professional development.
4. Advocate for policies that mandate the integration of career ladder systems into healthcare institutions as a tool for improving nursing retention and patient outcomes.

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### الملخص العربي

#### نظام السلم الوظيفي التمريضي : التأثير على التطوير المهني بين الممرضين

**الخلفية/ المقدمة:** إن توفير السلم الوظيفي للممرضين و الممرضات يشجعهم و يحافظ على التطوير المهني وممارسة التمريض. تقدم بعض مؤسسات الرعاية الصحية برنامج السلم الوظيفي لتشجيع الممرضين و الممرضات على السعي للتطوير المهني. كما يؤثر السلم الوظيفي على المستويات الأكاديمية وفرص الترقية والكفاءة والمكافآت والتقدير. **الهدف:** تقييم أثر برنامج نظام السلم الوظيفي التمريضي على التطوير المهني لدى العاملين في التمريض. . **تصميم البحث:** تم استخدام تصميم البحث شبه التجريبي مع الاختبار القبلي والاختبار البعدي لمجموعة واحدة في هذه الدراسة. **المواضيع:** اشملت موضوعات الدراسة على 172 من أصل 310 ممرضاً وممرضة يعملون في مستشفى جامعة عين شمس. **المكان:** أجريت الدراسة في مستشفى عين شمس التابع لمستشفيات جامعة عين شمس حيث يعمل الممرضون. **أدوات جمع البيانات:** تم جمع البيانات من خلال ثلاث أدوات لجمع البيانات وهي: استبيان المعرفة، ومقياس نظام السلم الوظيفي، ومقياس التطوير المهني القصير (PDSS). **النتائج:** بعد تنفيذ البرنامج، كان هناك تحسن ذو دلالة إحصائية عالية في معرفة السلم الوظيفي، ومستويات الإدراك ( $P=0.001$ ) ومستويات التطوير المهني بين الممرضين العاملين. كما كشفت الدراسة عن وجود علاقة ذات دلالة إحصائية عالية بين معرفة الممرضين وإدراك السلم الوظيفي ( $P=0.001$ ) والتطوير المهني ( $P=0.03$ ) بعد تنفيذ البرنامج. علاوة على ذلك، كان لبرنامج نظام السلم الوظيفي تأثير إيجابي على التطوير المهني لدى العاملين في التمريض. **الخلاصة:** أظهرت النتائج أن برنامج نظام السلم الوظيفي التمريضي له تأثير إيجابي على التطوير المهني لدى العاملين في التمريض. **التوصيات:** إجراء دراسات مقارنة بين المستشفيات الحكومية وغير الحكومية حول تطبيق نظام السلم الوظيفي ونتائجه لرفع التصور العام حوله.

**الكلمات الدالة:** السلم الوظيفي، التطوير المهني.