Nurse Education in Practice 40 (2019) 102616

Contents lists available at ScienceDirect

Nurse Education in Practice

journal homepage: www.elsevier.com/locate/nepr

Clinical education

Can a one-on-one mentorship program reduce the turnover rate of new graduate nurses in China? A longitudinal study

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ARTICLE INFO

Keywords:
New graduate nurses
Mentorship
Personnel turnover

ABSTRACT

Nursing graduates experience "reality shock" upon entering the workplace as well as face challenges and stress during their transition from nursing student to qualified nurse. The high turnover rate of new graduate nurses not only increases an organization's human resources costs but also results in a shortage of nurses. In particular, a poor experience during the transition from nursing student to qualified nurse can lead to significant turnover. A three-year longitudinal study was conducted to assess the effectiveness of one-on-one mentorship program in reducing the turnover rate of nurses in China. A total of 199 new graduate nurses, recruited in 2013, were considered the control group and received a basic preceptorship, and 239 nurses in 2014 were considered the experimental group, for which a one-on-one mentorship program was implemented. Propensity-score-matching analysis was conducted to adjust the baseline of the two groups, and survival analysis was performed to compare the two groups. The findings showed that the turnover rates for the experimental group were 3.77%, 3.48%, and 8.11% as compared to 14.07%, 9.36%, and 14.19% for the control group at the end of the first three years, respectively. The survival curves of the two groups were significantly different ($p < 0.001$). The turnover rate for the first year in the experimental group was significantly lower than that for the control group, but the rates in the second and third years were not different. The results indicate that a one-on-one mentorship program is beneficial for the retention of new graduate nurses, particularly during the first year.

1. Introduction

Nursing graduates experience "reality shock" upon entering the workplace (Kramer et al., 2013) as well as face challenges and stress during their transition from nursing student to qualified nurse (Cho et al., 2012; Hoffart et al., 2011; Teoh et al., 2013). Studies have found that the turnover rate of new graduate nurses in their first year on the job varies from 8% to 69% and from 26.2% to 57% in their second year (Bowles and Candela, 2005; Cho et al., 2012; Mills and Mullins, 2008; Salt et al., 2008; Scott and Smith, 2008; Zhang et al., 2016). The high turnover rate of new graduate nurses not only increases an organization's human resources costs but also leads to nursing shortages, which has been a persistent concern globally (Casey et al., 2004; Hayes et al., 2012; Salt et al., 2008). Therefore, research has focused on the underlying factors and has sought ways to reduce the turnover rate.

In China, the Bachelor of Nursing (BN) degree program usually consists of four or five years of academic and clinical study. Although undergraduate nursing students are required to have a clinical placement for eight to twelve months during the last year of the program, new graduates still have reported having a stressful experience when they first enter the workplace. Notably, the gap between theory and practice can make it difficult for them to adapt to the new environment. The difficulties during the transition period could cause these new nurses to feel overwhelmed, with some as leaving their first jobs or even quitting their nursing career. Because this is a global issue, helping new graduate nurses to manage the transition and retaining them in the profession is an urgent issue for all nursing managers and hospital leaders.

2. Literature review

Previous studies on the transition period from student to nurse have found that there are many ways to support new nurses and to improve the experience of the transition period, including internships,

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https://doi.org/10.1016/j.nepr.2019.08.010
Received 9 July 2018; Received in revised form 28 July 2019; Accepted 18 August 2019
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residencies, orientation, preceptorships, and mentorship programs (Edwards et al., 2015). Research has shown that preceptorship or mentorship programs do help new nurses to have higher competence, confidence, critical thinking, and job satisfaction and can even reduce the degree of stress and anxiety of new graduate nurses (Edwards et al., 2015).

Preceptorship programs are widely used in nursing continuing education as a way to support the transition of new graduates into the clinical setting (Gueorguieva et al., 2016; Muir et al., 2013). Preceptors are experienced nurses who possess a high level of knowledge, clinical proficiency, and professionalism and who work with new graduate nurses to facilitate and expand their clinical education through the preceptor's sharing experiences in patient care and with technology (Latham et al., 2008; Van Patten and Bartone, 2019). The implementation of a preceptorship program varies from basic preceptorship, whereby new nurses are assigned to one preceptor, to a complex preceptorship, with core study days, clinical supervision, and teams to coordinate nurses' development (Avis et al., 2013; Clark and Holmes, 2007; Ke et al., 2017; Marks-Maran et al., 2013). The findings of research on preceptorships show that they improve the confidence and competence of new graduates (Irwin et al., 2018). The abilities and motivation of the preceptors and their level of support as well as the clarity of measurement are key factors that influence the efficacy of the program (Irwin et al., 2018). Further, review studies have evaluated the impact of preceptorships on turnover and found that turnover decreased an average of 11% across studies (Brook et al., 2019; Whitehead et al., 2013).

Mentoring or mentorship programs also are commonly used. A mentor is a more skilled or more experienced person who acts as a role model and teaches, encourages, counsels, and befriends a less skilled or less experienced person as a means to promote professional and personal development (Anderson and Shannon, 1988), and a mentorship is defined as a trusting relationship between a novice and a professional with the intent to provide support (Van Patten and Bartone, 2019). Despite this well-accepted definition, the format and structure of the programs vary and may include peer, group, or one-to-one mentoring (Zhang et al., 2016). In several studies, mentorship has been found not only to promote personal and professional development but also to increase learning and confidence (Cottingham et al., 2011; Komaratat and Oumtanee, 2009; Phillips et al., 2014; Spiva et al., 2013). Phillips et al. reported that the pilot implementation of the California Nurse Mentor Project improved newly hired or new graduate nurses' job satisfaction and professional confidence and that the participants had a lower attrition rate than did non-participants within a year of hire. They summarized the factors that contribute to the success of the program, including supportive institutional practices and fostering collegial respect. In addition, a systems review shows that turnover was reduced by an average of 12% or retention was increased by 17%, on average, in studies of mentorships (Brook et al., 2019). Li et al. (2014) conducted a randomized control study to compare the effect of a one-to-one mentorship system and a traditional preceptor system on the self-efficacy of new nurses in intensive care units and emergency departments in China. The results indicated that a mentorship system improved their self-efficacy and facilitated the transition process. It should be noted, however, that the study used a small sample and did not determine long-term effectiveness, and the turnover rate was not determined.

The research reviewed above shows that both preceptorship and mentorship are effective methods to ease new graduate nurses' transition into practice and to decease the turnover rate of new graduate nurses. The strategies used in these programs, however, cannot be replicated easily because their design and structure vary by clinical setting and cultural background. Further, researchers seldom follow up to determine the turnover rate of the participants or analyze the data with advanced statistical techniques. Thus, the trend in the turnover rates of new graduate nurses after implementation of the programs remains understudied. The present study is designed to address the gaps in the research and was guided by the following questions:

1. What is the trend in the turnover rates of new graduate nurses within three years of their first job in China?
2. To what extent is a one-on-one mentorship program better than a basic preceptorship in decreasing the turnover rate over time?

3. Research design and methods

3.1. Design and sample

This research was designed as a three-year longitudinal, non-randomized control study. We included new graduate nurses who were recruited into our hospital in August 2013 and 2014. To be recruited, the nurses needed to have earned a bachelor's degree in nursing and to have passed the nursing registration examination. Nurses who had previous work experience were excluded in this study. New graduate nurses recruited in August 2013 were assigned to the control group and received a basic preceptorship, whereas the nurses in 2014 were considered the experimental group for which a one-on-one mentorship program was implemented. In this study, the nurses were not randomly assigned to the two groups, as it was neither ethical nor practical to do so. We already were aware that a one-to-one mentorship program benefits nurses. Thus, instead, we used an asynchronous comparison, which could avoid contamination between the two groups.

PASS15.0 software was used to calculate sample size for testing the differences between turnover rates, using a log-rank test. Based on the annual turnover rate of new nurses in our hospital, we estimated that the three-year turnover rate of the control group would be 30% and that of the experimental group would be 15%. We set the power at 0.80 and a Cronbach's alpha of 0.05. We assumed 1% attrition in each group. With a two-sided hypothesis, at least 120 participants for each group should be included.

3.2. Setting

The study was conducted in a tertiary general hospital located in the Hangzhou, Zhejiang Province of China, which owned 3200 beds in two campuses. The ratio of bed to nurse was 1:0.70 and 1:0.72 in December 2013 and 2014, respectively.

3.3. Intervention methods

New graduate nurses in both groups were given a three-week intensive orientation, including an introduction to the hospital and nursing department, the rules and policies of the hospital and nursing department, patient safety goals, basic life support, and a basic nursing skills demonstration and test. Afterward, all nurses were assigned to a unit.

3.3.1. Basic preceptorship program

All nurses in the control group were assigned to one preceptor. Qualified registered nurses received a series of training on nursing professional proficiency, education skills, communication and cooperation, and management. The new graduate nurses worked under the supervision of a preceptor until they obtained a Practicing Nurse Certificate, through registration, and were assessed by a nurse educator and passed the Evaluation of the Ability to Work Independently test. New nurses usually get their registration in December, and the length of their engagement with a preceptor is between four and six months. The main role of the preceptor involves bedside teaching, supervision of practice, and competency assessment. A different preceptor might be assigned, however, due to the arrangement of shifts.

Table 1
Description of the preceptorship and mentorship programs.

Comparison	Basic preceptorship program	One-on-one mentorship program
Basic requirements	Bachelor's degree or N3[a] and above At least three years of work experience	Bachelor's degree or N3[a] and above At least three years of work experience Volunteer as a mentor
Selection process	Head nurse assigns a preceptor for each new nurse	Head nurse holds a discussion with a new nurse within one month after assignment to the unit to determine whether the nursing staff member will serve as a mentor
Duration of the relationship	Continues until the new nurse is assessed as qualified to work independently (usually 4–6 months)	12 months
Job description	Provide unit orientation and assign daily tasks Teach the specific roles and responsibilities of the nurses on the unit Supervise the application of knowledge and skills by the new nurse in the practice environment Assist the new nurse in learning certain tasks and skills Evaluate the new nurse's clinical competencies and identify areas that need additional training	Act as a preceptor Provide encouragement, guidance, and support for the nurse in terms of difficulties in the first year of nursing Guide the overall transition from student to nurse Understand and advocate for the individual needs of the new nurse in a variety of areas, including professional and personal

Note. a. The nurses are categorized into N0, N1, N2, N3, and N4 according to the work year and competency in the clinical ladder system.

3.3.2. One-on-one mentorship program

Each nurse in the experimental group selected one mentor, based on the suggestion of a head nurse. The mentoring relationship between the mentor and graduate lasted for the full year, even if they were assessed as qualified to work independently. The mentoring activities were guided by the five functions of mentoring: teach, sponsor, encourage, counsel, and befriend (Anderson and Shannon, 1988). The relationship between the mentor and mentee is fundamental for psychological and social support as well as for role modeling. The relationship is considered nurturing and enduring. An individualized career development plan was tailored for each new nurse, depending on the nurse's characteristics. The experienced nurses who acted previously as preceptors were chosen as mentors. These nurses were provided with a 4-h orientation program that focused on the development of mentoring skills to enable them to be well prepared to support the successful implementation of the mentorship program. The nursing department arranged regular meetings with mentors and clarified the mentoring objectives and responsibilities. The roles of preceptor and mentor were clearly delineated (Table 1).

3.4. Data collection

The observation time began with the date of employment and ended at the date on which the nurse left the job or the study was finished, whichever came first. Demographic data for all new nurses were collected at the date of employment, including age, gender, hometown, hospital for internship, units, and so forth. Hometown was categorized into three groups: Hangzhou (the city where the research hospital is located), Zhejiang Province (except the capital city, Hangzhou), and other provinces. Some of new nurses finished their undergraduate internship in the research hospital, and others in other hospitals. Units included medical or surgical wards, the intensive care unit (ICU), emergency room (ER), and operating room (OR). We developed an Excel sheet to record these data.

For the nurses employed in the hospital, an electronic file was created and stored in the Online Nursing Resource System. The information for the nurses was updated dynamically by the nursing department and human resources department. When a nurse quit the job, the electronic file was terminated and marked “resignation.” One of the researchers received the approval of the human resources department to search in the Online Nursing Resource System, on a monthly basis, the lists of nurses who left the job and to export the list, which included the nurse's name, ID, and the date that the nurse left. One researcher calculated the days that each nurse stayed in the job. We followed up with each group for three years, and the turnover rates of the two groups for each year were calculated separately. The annual turnover rate is the number of nurses who quit the job during one year divided by the total number of nurses at the beginning of the year.

3.5. Statistical analysis

Data were analyzed using SPSS 22.0. Normally distributed continuous data were presented as mean ± standard deviation (SD) and, otherwise, as median and interquartile ranges. Category data were presented as number and percentage of the sample. The ages of the nurses in the two groups were compared by an unpaired Student's *t*-test. The other demographic data were tested by a chi-square test separately.

We did propensity-score-matching (PSM) analysis to adjust for potential confounders that might affect the turnover rate of new nurses. The confounding variables used to compute the propensity score were variables that were not equal between the two cohorts. To maximize performance execution, a matching method was used to make a 1:1 match between the two groups, and the caliper value was set as 0.02. Then, the demographic variables of the two matched pairs were compared again. The ages of the paired nurses were compared using a paired Student's *t*-test.

Survival analysis was performed to illustrate the survival curves of new nurses and to examine factors related to their turnover. For the survival analysis, the event was defined as the “turnover of the nurse,” and the timing of events was the duration of the job in days. In contrast to logistic analysis with dichotomous dependent variables and conventional linear regression analysis with continuous dependent variables, survival analysis has the advantage of taking into account both the occurrence and the timing of the turnover, that is, how long the nurses stayed in the job. The comparison of survival curves was performed using the Kaplan-Meier method. The difference in the turnover survival curves of new graduates was examined by the log-rank test, which is the most widely used test for differences in survival curves. Both overall data and matched data were analyzed.

Before matching, a Cox proportional hazard regression also was run to examine the risk factors associated with the turnover of new nurses. This allowed an investigation of the effect of covariates by controlling for other confounding variables. Demographic variables that had a significant difference in univariate analysis were chosen as covariates; group (preceptorship or mentorship) also was considered a major covariate. For categorical variables, dummy variables were created to measure the association, using the reference category of choice (for example, group was coded as preceptorship program = 0, and mentorship program = 1; hometown was categorized into three choices: Hangzhou = 1 (reference), Zhejiang province (except Hangzhou) = 2, and other provinces = 3; and unit was divided into three choices: medical or surgical wards = 1 (reference), ICU or ER = 2, and OR = 3). The enter-method model building approach was used to select variables, and the cut-off probability values for inclusion and exclusion

Table 2
Demographics and univariate analysis of new graduate nurses.

	Overall series						Propensity-score-matched pairs					
	Control group (n = 199)		Experimental group (n = 239)				Control group (n = 167)		Experimental group (n = 167)			
Variable	Mean	SD	Mean	SD	t	p	Mean	SD	Mean	SD	t	p
Age	23.13	1.07	23.27	1.21	−1.127	0.261	23.19	1.15	23.23	1.23	−0.344	0.731
	n	%	n	%	$\chi 2$	p	n	%	n	%	$\chi 2$	p
Gender												
Male	26	13.07%	36	15.06%	0.357	0.550	20	12.00%	33	19.80%	3.790	0.052
Female	173	86.93%	203	84.94%			147	88.00%	134	80.20%		
Hometown												
Hangzhou	39	19.60%	51	21.34%	11.339	0.003*	33	19.80%	33	19.80%	0.000	1.000
Zhejiang Province (except Hangzhou)	59	29.65%	39	16.32%			39	23.40%	39	23.40%		
Other provinces	101	50.75%	149	62.34%			95	56.90%	95	56.90%		
Hospital for internship												
Employment hospital	79	39.70%	74	30.96%	3.646	0.056	69	41.30%	56	33.50%	2.161	0.142
Other hospitals	120	60.30%	165	69.04%			98	58.70%	111	66.50%		
Units												
Medical and surgical wards	132	66.33%	187	78.24%	9.757	0.008*	115	68.90%	115	68.90%	0.000	1.000
ICU and ER	48	24.12%	43	17.99%			43	25.70%	43	25.70%		
OR	19	9.54%	9	3.77%			9	5.40%	9	5.40%		

Note. ICU = intensive care unit, ER = emergency room, OR = operating room; *$p < 0.05$ (significant).

were 0.05 and 0.10, respectively. The proportional hazard assumption was checked, and then a post-test of proportional hazards assumption was run. The results of the Cox regression are presented by providing hazard ratios (HRs), the corresponding 95% confidence interval (CI), and the p-value reported for each factor; $p < 0.05$ indicates that the difference was statistically significant.

3.6. Ethical considerations

The ethical issues of this study were reviewed and approved by the human research ethics board of the research hospital (Case No. 2019239).

4. Results

4.1. Demographics of participants

The control group included 199 new graduate nurses, and the experimental group included 239 new graduate nurses. The demographics of the nurses in both groups are shown in Table 2. The majority of new nurses in both groups were female (about 85%) and averaged about 23 years old. More than 50% came from provinces other than Zhejiang, and approximately 60% had their internship in a hospital other than the hospital of employment. Approximately 70% were assigned to medical and surgical units. There were no statistically significant differences in age, gender, or the internship hospital between the two groups ($p > 0.05$), whereas hometowns and units were significantly different ($p < 0.05$). Compared to the control group, more nurses in the experimental group came from other provinces, more worked in medical and surgical units, and fewer worked in the ICU, ER, and OR. After the matching process, the basic characteristics of two groups were comparable (Table 2). Of the nurses in the matched control and experimental groups, 88.00% and 80.20% were female respectively. And 41.30% and 33.50%, respectively, had their internship in the hospital of employment. Besides hometowns and units, the age, gender, hospital for internship between two groups also were statistically same ($p > 0.05$).

4.2. Turnover rates of two groups

A total of 66 nurses (33.17%) in the control group left their job during the three years of the study, while 35 nurses (14.64%) in the experimental group left. The 1-, 2- and 3-year turnover rates for the experimental group were 3.77%, 3.48%, and 8.11% compared to 14.07%, 9.36%, and 14.19% for the control group, respectively. For the matched pairs, the 1-year turnover rate of new graduate nurses in the experimental group was significantly lower than that of the control group ($p < 0.05$), while the 2- and 3-year rates were not significantly different between the two groups ($p > 0.05$) (Table 3).

4.3. Survival analysis and Cox regression analysis

The survival curve of overall new nurses is shown in Fig. 1, and that of the PSM pairs, in Fig. 2. The curves of two groups were significantly different (log-rank test $p < 0.001$). For the PSM cohort, the estimated probability that a new graduate nurse in the experimental group would survive (stay in the job) for three years was 0.84, greater than that for the control group.

Table 4 shows the results of the Cox proportional hazards regression analysis for the total turnover rate of the overall nurses. The p-value for the global chi-square test is less than 0.001, indicating the validity of the proportional hazard assumptions. Nurses who received one-to-one mentoring were less likely to leave (HR = 0.361, CI = 0.237–0.551), and nurses from Zhejiang province (except Hangzhou) and other provinces were more likely to leave (HR = 2.119, CI = 1.019–4.408; HR = 2.800, CI = 1.435–5.463, respectively).

5. Discussion

The aims of the present study were to clarify how a one-on-one mentorship program is distinctive from a basic preceptorship program and to examine the effect of a one-on-one mentorship program on the turnover rate of new graduate nurses, who were followed up for three years. The results showed that the turnover rate for the experimental group was 3.77%, 3.48%, and 8.11% as compared to 14.07%, 9.36%, and 14.19% for the control group at the end of each of the three years, respectively. The turnover rate of new graduate nurses for the first year in the experimental group was significantly lower than that of the control group ($p < 0.05$).

That the hometowns and units of recruited nurses in the two groups were significantly different could affect the reliability of the results. We used PSM analysis to adjust the baseline of the two groups, and the results were consistent. The mentorship program was found to be significantly and negatively related to the turnover rate. These results

Table 3
Comparison of turnover rates of new graduate nurses.

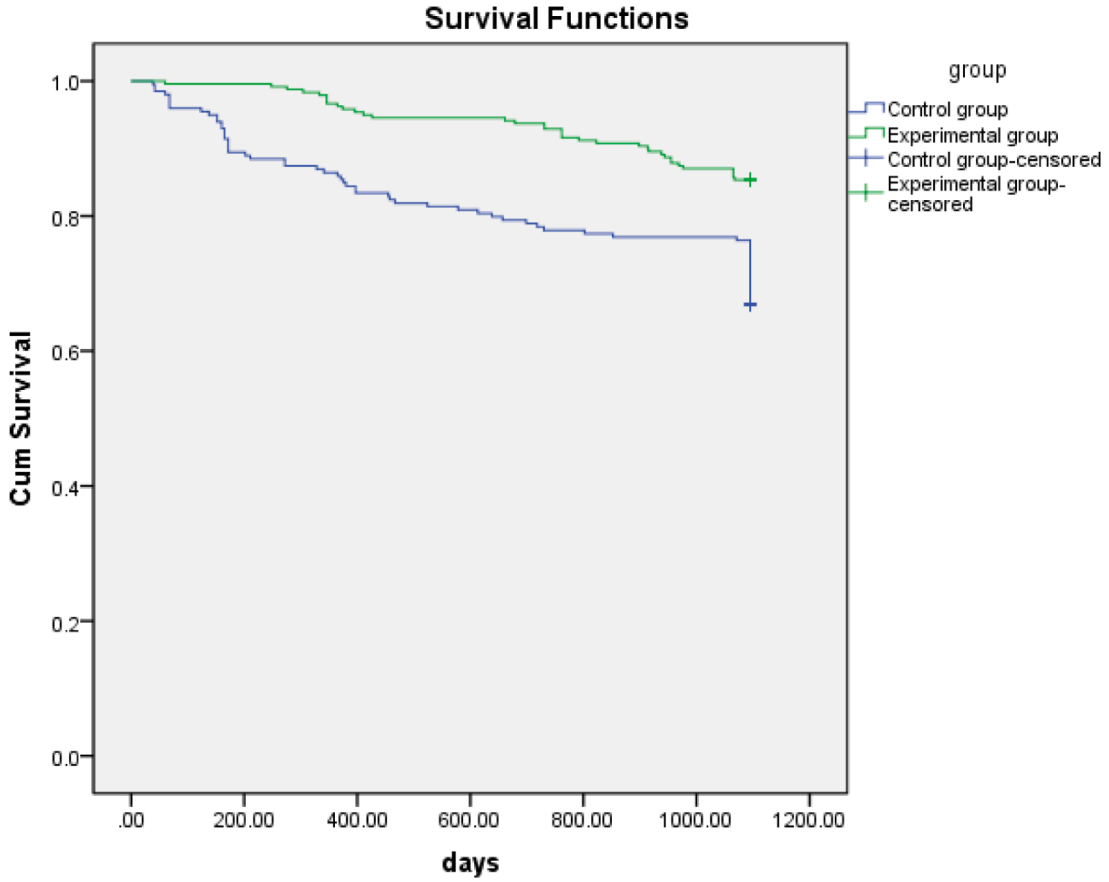
Overall series					Propensity-score-matched pairs			
Variable	Control group	Experimental group	χ^2	*p*	Control group	Experimental group	χ^2	*p*
First year								
Total nurses	199	239	14.909	< 0.001*	167	167	8.848	0.003*
Leavers	28	9			24	8		
Turnover rate	14.07%	3.77%			14.40%	4.40%		
Second year								
Total nurses	171	230	6.023	0.014*	143	159	4.749	0.029
Leavers	16	8			13	5		
Turnover rate	9.36%	3.48%			9.10%	3.10%		
Third year								
Total nurses	155	222	3.564	0.059	130	154	2.687	0.101
Leavers	22	18			19	13		
Turnover rate	14.19%	8.11%			14.60%	8.40%		
Three years								
Total nurses	199	239	20.995	< 0.001	167	167	14.547	< 0.001
Leavers	66	35			56	26		
Turnover rate	33.17%	14.64%			33.53%	15.57%		

Note. We used the Bonferroni method to adjust the *p*-value. *The adjusted *p*-value is 0.003*3 = 0.009, 0.014*3 = 0.042, which are lower than the significance level of 0.05.

were similar to those of several studies that indicated that a mentoring program could decrease the turnover rate by 2–15%. (Faron and Poeltler, 2007; Halfer et al., 2008; Mills and Mullins, 2008; Scott and Smith, 2008).

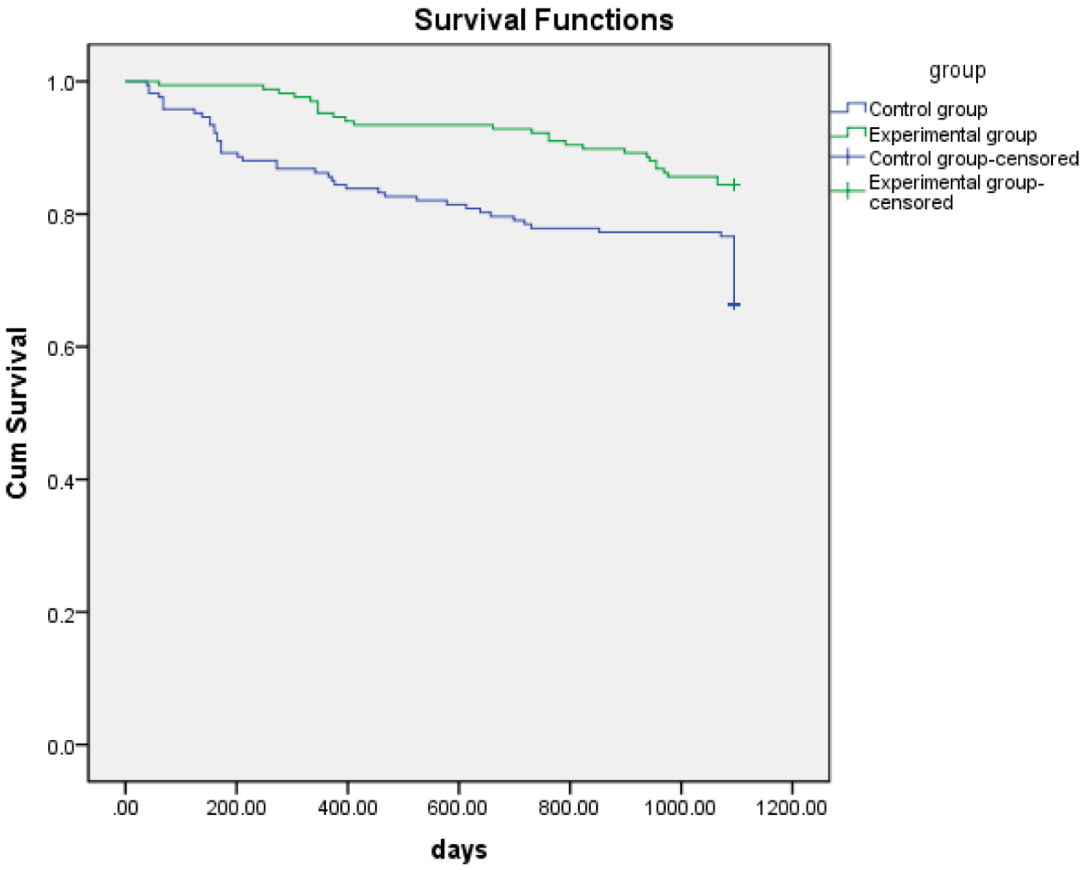
The turnover rates in the second and third years were not different statistically between the two matched groups in our study. This suggests that nurse managers or educators need to investigate other strategies to retain nurses. Notably, after the transition to practice, other organizational, economic, and individual factors, including job satisfaction and intent to leave, might affect the turnover of the nurses (Hayes et al., 2012).

The common element of a basic preceptorship and a one-on-one mentorship programs is that qualified nursing staff members are specifically trained and assigned to work closely with each other and to



Log-rank test: Chi-square = 21.521, $p < 0.001$

Fig. 1. Survival curve of overall new nurses by groups.



Log-rank test: Chi-square = 14.488, $p < 0.001$

Fig. 2. Survival curve of propensity-score-matched pairs.

Table 4
Cox proportional hazards regression analysis of overall new nurses' turnover.

Variable	Hazard ratio	95% confidence interval	*p*
Program			
Basic preceptorship	1.000	–	–
One-on one mentorship	0.361	0.237–0.551	< 0.001*
Hometown			
Hangzhou[a]	1.000	–	–
Zhejiang Province (except Hangzhou)	2.119	1.019–4.408	0.044*
Other provinces	2.800	1.435–5.463	0.003*
Unit			
Medical and surgical wards*	1.000	–	–
ICU and ER	0.964	0.604–1.538	0.878
OR	0.459	0.167–1.263	0.131

Note. a. Reference group, *$p < 0.05$ (significant).

support new staff within the clinical setting. Thus, we need to consider why the mentorship program was more effective in retaining new nurses.

First, one crucial factor in determining whether mentorship is successful is the effectiveness of the mentor. Research has reported on the process of mentor selection and training. Halfer et al. (2008) found that experienced staff nurses, advanced practice nurses, administrative leaders, and educators were recruited as mentors and that new nurses selected their mentors from a list of potential mentors. In a randomized control study conducted by Li et al. (2014), which focused on new nurses in the ICU and ER, nurses-in-charge were selected as mentors if they had a four-year college degree or above, at least three years of working experience in the ICU or ER, adequate knowledge, and accomplished clinical skills and were willing to join a mentoring program. In our study, the mentor pool was set up according to the criteria (Table 1), and then mentors were equipped with essential training. An orientation program, certification training, and periodic training classes for mentors were reported in several studies (Faron and Poeltler, 2007; Komaratat and Oumtanee, 2009; Li et al., 2014; Mills and Mullins, 2008). Topics in mentor training might include conflict resolution and critical thinking, adult learning, communication, nursing skills, and how to be a successful mentor, which were provided by lectures, workshops, or case studies. Our mentors were given a 4-hour orientation program that focused on developing mentoring skills on the basis of training for preceptors. Finally, it was critical for the staff to meet with mentors regularly and to clarify mentors' responsibilities and mentorship objectives in the meetings.

Second, it has been suggested that the mentor and new nurse should possess common interests and values, which will enhance the mutual attraction (Scott and Smith, 2008). Thus, we felt it important that the mentor should be selected by the new nurse as well as the head nurse. We allowed the new nurse to become acquainted with the mentor first and then to establish the mentoring relationship within one month. This ensured the matching of the mentor and mentee by interests and values.

The mentor and mentee worked together in the same unit, which helped them to maintain a close relationship.

We believe that mentors play a fundamental role in retaining new nurses. Compared with preceptors, mentors not only provide guidance on professional knowledge and skills but also provide support and encouragement in both professional and personal realms. We predicted that the mentorship program would increase staff retention by decreasing stress and promoting confidence and self-efficacy, which already was shown in another study (Zhang et al., 2016).

Before developing our conclusions, we needed to take into account the limitations of this study. The generalizability of the results is limited because we did not use a randomized control study. The two samples were not from the same period, which threatens the internal validity of the study. Although we found that the external environment, which includes human resources, regulations, and the culture of the hospital, did not change between the two periods. There were still some factors that could affect the retention of new nurses. For example, the high turnover rate of new nurses in 2013 might remind nurse managers to pay more attention to new nurses and to create a more supportive environment for the new nurses in 2014. Another limitation is that the study was conducted in a single organization. Thus, we do not know whether the one-on-one mentorship program is applicable to other practice settings in China. Any hospital that plans to replicate the program should consider how to best integrate the several basic components noted above into its program design and implementation.

6. Conclusion

The shortage of nurses has drawn our attention to the recruitment and retention of new nurses. As is known, many hospitals in China need to recruit at least 200 to 300 nurses each year, most of whom are new graduates. Their retention, however, is a challenge for nursing managers and hospital administrators. This was a longitudinal study conducted to trace the effects of a mentorship program, as compared with a basic preceptorship program, on the turnover rate of new graduate nurses. Even with the design limitations of this study, the findings indicate that a one-on-one mentorship program is more beneficial for the retention of new graduate nurses during the first year of employment. Because a mentoring program is an effective strategy, hospitals or nursing departments should develop standards for mentor selection, training, and evaluation to ensure the consistency of mentorship among different units. In later years, new nurses become more qualified, but turnover remains a problem. Nurse managers or educators should determine the factors that affect nurses' leaving and explore effective interventions to address the problem.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest

The manuscript has not been submitted for consideration to any other journal either partly or totally.

Acknowledgements

The authors wish to thank all new graduate nurses who kindly agreed to participate in the study. And thank Marcia A. Petrini for writing assistance in this paper.

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