6. Analysis

This chapter provides an analysis that divides the contents of ten research articles into themes through thematic analysis. The process of thematic analysis and an analysis of themes are provided in this chapter.

6.1. Process of thematic analysis

A maximum of five types of themes is generated from thematic analysis. They are substantive themes, methodological themes, generalizability themes, historical themes and researcher themes. Substantive themes mean themes related to the pattern of evidence and the power of observed effect. Methodological themes mean themes related to the difference of results due to difference of research designs. Generalizability themes mean themes related to difference of findings due to difference type of people or settings. Historical themes mean the themes that related to better evidence over time. Researcher themes mean themes related to differences in results due to researcher's characteristics.

Not all types of themes are applied in a thematic analysis. The most common type of theme is substantive theme and all themes identified is substantive theme. The other four types of themes are not applied because of the following reasons.

- Methodological themes are not applied since all research articles apply similar research methodology, namely, cross-sectional survey and secondary data analysis.
- Generalizability themes are not applied since all results generally pointed to a fact that good nurse practice environment leads to less burnout and better quality of care, vice versa.
- Historical themes are not applied since the research articles found are within the range of 2009 to 2018.

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- Researcher theme are not applied since all results generally pointed to a fact that good nurse practice environment leads to less burnout and better quality of care, vice versa. There are no differences of views from different researchers.

There are two steps in producing themes. Since it is not possible for a novice researcher with limited resources and time to produce meta-analysis, meta-ethnography and meta-study. A simple scale of meta-summary is produced.

The first step is to organize a table. The contents of the research articles are organized into categories including the objectives, sample size, research design, results and implications for practice. After organizing them into a table, the results of the study are compared across studies. In the process of comparing the results across studies, patterns can be found through reading the table. The patterns are then organized into themes.

The second step is to map the themes to construct a knowledge framework. A knowledge framework is a simple organization of ideas as expressed in themes. To organize the knowledge in the thematic analysis, a simple tree diagram is applied. Tree diagram represents the hierarchical nature of structure in a graphical format. n this diagram, lines that branched from the central point are linked to the sub-points. Lines will be drawn between different themes to show the connection between different themes.

6.2. Themes in this research

After a process in producing themes from the contents of the ten research articles, four themes were identified. The four themes are:

- Research articles generally pointed out that good nurse practice environment lead to reduced burnout and better quality of care, regardless of whether these research articles investigated both burnout and quality of care and whether they use the same terms.

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- Long shift hours and higher workload explained a reduction in quality of care measured by patient satisfaction, death, failure-to-rescue ratio and number of adverse events.
- The relationship between nurse practice environment and quality of care may be mediated by factor such as perceived workload, decision latitude, social capital and three dimensions of work engagement, burnout.
- Better workplace empowerment and programmes to improve nurse practice environment leads to job satisfaction, organizational commitment, improvement in nurse-doctor relationship, nurse management, hospital management-organizational support, nurse-reported quality of care.

6.3. The Knowledge Framework in this research

Tree diagram is applied to illustrate the knowledge framework in this research. The following page is the tree diagram.

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Figure 1 A Tree Diagram showing the knowledge framework of

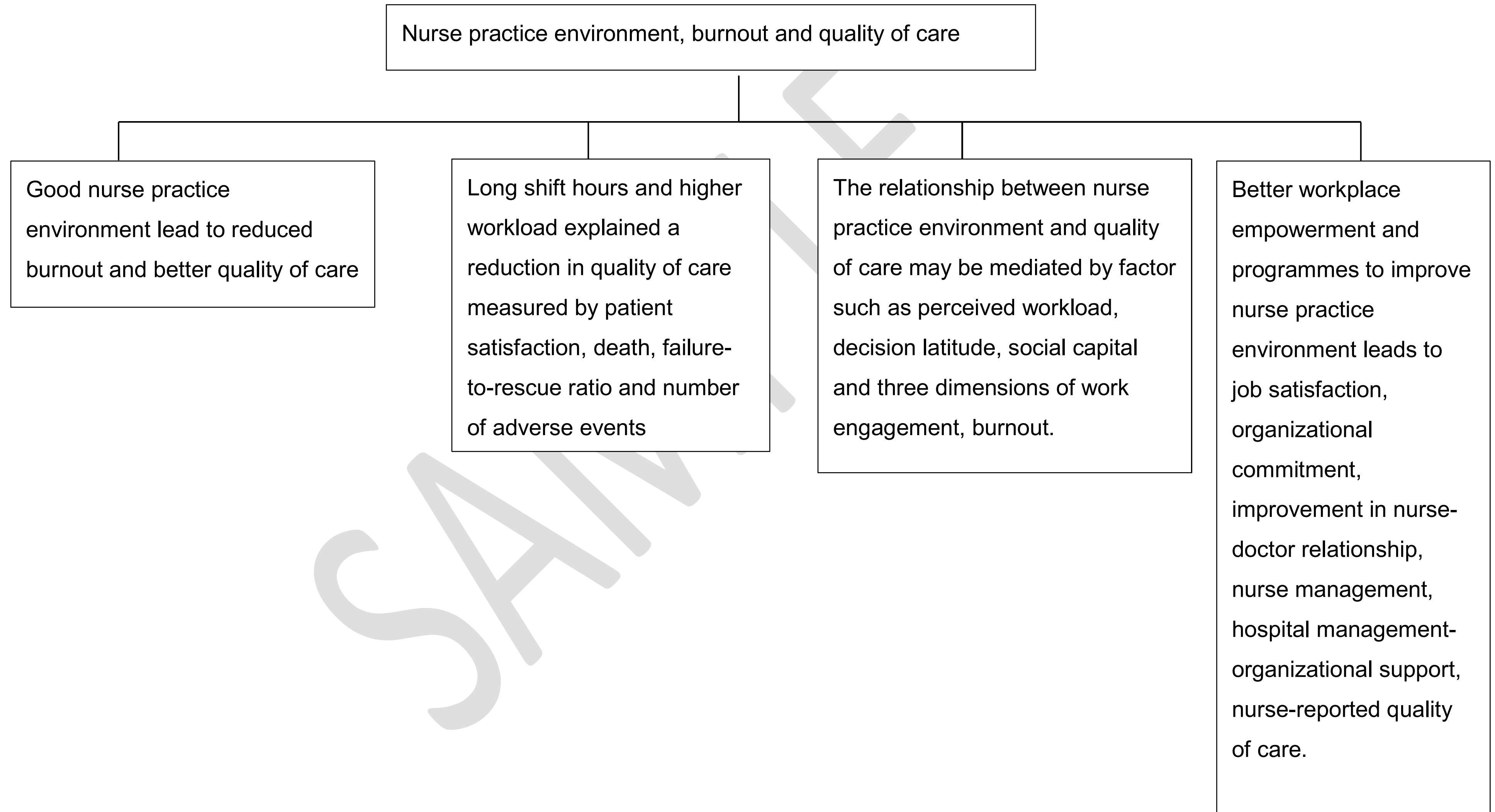

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Table 5 Distribution of themes

	Theme 1	Themes 2	Theme 3	Theme 4
Van Bogaert et al (2010)	v			
Van Bogaert et al (2014)	v		v	
Stimpfel et al (2012)	v	v		
Spence Laschinger et al (2009)	v			v
Van Bogaert et al (2013)	v		v	
Hayes et al (2015)	v			
Aiken et al (2011)	v	v		
Stimpfel et al (2014)	v			v
Duffield et al (2011)	v	v		
Van Bogaert et al (2014)	v			v

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6.4. Detailed analysis of the themes

Theme 1:

Research articles generally pointed out that good nurse practice environment lead to reduced burnout and better quality of care, regardless of whether these research articles investigated both burnout and quality of care and whether they use the same terms (Van Bogaert et al, 2010; Van Bogaert et al, 2014a; Stimpfel et al, 2012; Spence Laschinger et al, 2009; Van Bogaert et al, 2013; Hayes et al, 2015; Aiken et al, 2011; Stimpfel et al, 2014; Duffield et al, 2011; Van Bogaert et al, 2014b)

Van Bogaert et al (2010) found that positive shared ratings of nurse practice environment factors are associated with reduced burnout, improved job outcomes and higher nurse ratings of quality of care. Besides, it was found that higher ratings in burnout, particularly emotional exhaustion, is negatively related to nurse-physician relations, nurse management at the unit level and hospital management and organizational support. In other words, less-superior nurse practice environment leads to higher rating in burnout. Furthermore, among the factors in nurse practice environment, nurse management at the unit level is the most important factor in predicting quality of care on the unit (Van Bogaert et al, 2010). The finding is consistent with the theme that good nurse practice environment lead to reduced burnout and better quality of care.

In Van Bogaert et al (2014a), three independent variables of nurse practice environment, namely, nurse-physician relationship, nurse management at the unit level and nurse management and organizational support do not have direct relationship to job satisfaction and nurse-assessed quality of care. They are instead mediated by a few factors in nurse work characteristics and work engagement. For example, nurse management at the unit level can directly affect nurse-assessed quality of care and job outcomes on one hand while also indirectly affect nurse-assessed quality of care by mediation of decision latitude, dedication and absorption (Van Bogaert, 2014a). The finding is consistent with the theme that good nurse practice environment is related to better quality of

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care. The relationship between different factors is presented in the following figure.

Figure 2 The relationship between nurse practice environment and outcome variables as mediated by nurse work characteristics and work engagement

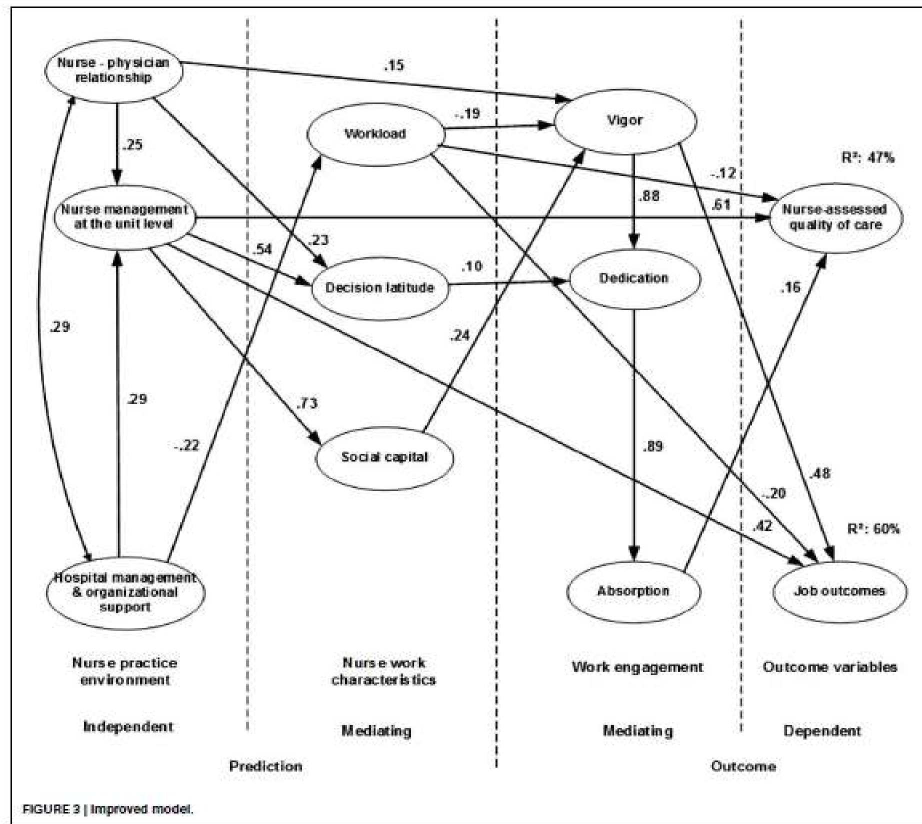

FIGURE 3 | Improved model.

Ref.: Van Bogaert et al (2014a)

As shown in figure 2, nurse management at the unit level has the largest effect size in its relationship with nurse-assessed quality of care and job outcomes. Besides, nurse-physician relationship and hospital management and organizational support have a less direct relationship with job outcomes and nurse-assessed quality of care. In other words, it is mediated by factors of nurse work characteristics and work engagement (Van Bogaert et al, 2014a). The effect size is also much smaller when compared with nurse management at the unit level. This is consistent with the findings of Van Bogaert et al, 2010 that nurse management at the unit level is the most important factor that shape nurse-assessed quality of care and job outcomes. Therefore, in the discussion

chapter, the recommendation is focused on improving nurse management at the unit level.

In Stimpfel et al (2012), it was found that the longer the hours of shifts, the greater the likelihood of adverse nurse outcomes such as burnout. Besides, the longer the hours of shift, the higher the chance for patient dissatisfaction. For instance, patients were less satisfied with their care when there is a higher proportion of nurses working for 13 hours or more than those nurses working for 11 hours or fewer (Stimpfel et al, 2012).

Apart from the factors of nurse practice environment, namely, nurse-physician relationship, nurse management at the unit level and nurse management and organizational support, the number of hours in a shift should also be a factor of nurse practice environment. This study clearly shows that longer working hour lead to more burnout and less desirable quality of care (Stimpfel et al, 2012).

In Spence Laschinger et al (2009), it was found that workplace empowerment, low level of incivility and burnout were significant in predicting nurse experiences of job satisfaction, organizational commitment and their lesser intentions to leave their workplaces. It shows the positive effect of working in a setting that employees treat each other respectfully and refrain from uncivil behaviors in day-to-day work. Besides, lesser workplace empowerment, supervisor incivility and cynicism most strongly predicted job dissatisfaction and low commitment. Furthermore, emotional exhaustion, cynicism and supervisor incivility most strongly predicted turnover intentions (Spence Laschinger et al, 2009). This result points to the fact that better nurse practice environment can reduce burnout and nurse outcome in job satisfaction which is consistent with the theme.

Van Bogaert et al (2013), similar to Van Bogaert et al (2014a), found that nurse management at the unit level is directly related to nurse-assessed quality of care and job outcomes among psychiatric nurses. Besides, nurse-physician relationship and hospital management and organizational support are related

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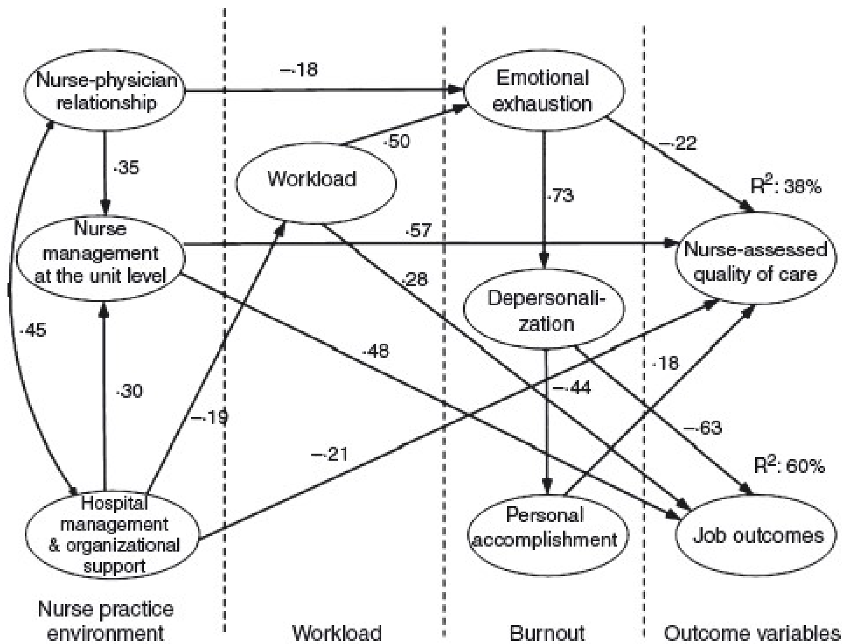
to workload and emotional exhaustion, and emotional exhaustion is related to nurse-assessed quality of care, depersonalization and job dissatisfaction. The below figure shows the interaction of the relationship.

Figure 3 Linkage of research results in Van Bogaert et al (2012)



Ref.: Van Bogaert et al (2012)

Although the interactions of relationship are complicated, it shows that nurse practice environment has impact on nurse-assed quality of care and burnout no matter it is direct or indirect.

In Hayes et al (2015), it was found that work environment is correlated to job satisfaction and negatively correlated to emotional exhaustion and depersonalization, low job stress. It is consistent with the theme.

Aiken et al (2011) investigated the conditions under which the impact of hospital nurse staffing and work environment are associated with patient outcomes. The mean outcome measure is 30-day inpatient mortality and failure-to-rescue. The interesting findings is that those hospitals with poor work environment does not

decrease the death and failure-to-rescue ratio even with decreasing workloads by decreasing patient-to-nurse ratio. In other words, the patient outcomes in hospitals with poor work environment does not improve with lower nurse workload. However, this impact is found in hospitals with average work environment and best work environment. Overall, the effect of 10% more nurses decreases the 30-day inpatient mortality and failure-to-rescue by about 4% regardless of their work environment. Overall, it was found that hospitals must improve nurse work environment before adding staff to deal with workload, otherwise the efforts may be futile. Also, adding nursing staff inevitably improve patient outcomes. It is also consistent with this theme.

Stimpfel et al (2014) found that Magnet recognition is significantly associated with improvement in nurse-reported quality of care. Professional practice environment mediates the relationship between Magnet status and quality of care. This is also consistent with the theme. Magnet recognition is a recognition given by the American Nurses' Credentialing Center (ANCC), to hospitals that is stated to be one where nursing delivers excellent patient outcomes, where nurses have a high level of job satisfaction, and where there is a low staff nurse turnover rate and appropriate grievance resolution.

Duffield et al (2011) found that higher levels of registered nurses (qualified nursing staff) were associated with lower levels of adverse events. Also, it is found that when workload increased because of increasing number of patients and when nurses experienced emotional abuse, quality of care reduced. This latter finding is consistent with the theme.

Van Bogaert et al (2014b) found that The Productive Ward Program which is related to improvement in structural empowerment, transformational leadership and professional practice leads to improvements in nurse-doctor relationship, nurse management and hospital management-organizational support, nurse-reported quality of care and job satisfaction. Although the Productive Ward Program does not improve burnout, it improves the other outcomes especially quality of care.

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Overall, it was found that all ten research articles identified improve burnout and/or quality of care. The most common finding is that lower staff workload, better nurse practice environment leads to improved quality of care (Van Bogaert et al, 2014a; Stimpfel et al, 2012; Van Bogaert et al, 2013; Aiken et al, 2011; Stimpfel et al, 2014; Duffield et al, 2011; Van Bogaert et al, 2014b). Another type of finding is that better nurse practice environment leads to lower burnout and improved quality of care (Van Bogaert et al, 2013; Van Bogaert et al, 2010; Spence Laschinger et al, 2009).

Theme 2

Long shift hours and higher workload explained a reduction in quality of care measured by patient satisfaction, death, failure-to-rescue ratio and number of adverse events (Stimpfel et al, 2012; Aiken et al, 2011; Duffield et al, 2011).

Stimpfel et al (2012) found that patient satisfaction decreased when nurses work a longer shift hour of 13 hours or more. Predictably, patient satisfaction increased when nurses work for a shorter shift hour of 11 hours or less. Patient satisfaction increases when the length of shift decreases. Besides, nurses who are working in shifts of ten hours or more were up to two and a half times more likely than nurses working shorter shifts to experience burnout and job dissatisfaction. This result shows that the longer the shift hour, the lesser the patient satisfaction, vice versa.

Aiken et al (2011) found that, in general, the lower the workload of nurses as measured by the greater number of nurses, the lower the inpatient mortality and failure-to-rescue, vice versa. However, the magnitude of such phenomenon is affected by the nurse work environment. In hospitals of poor work environment, such phenomenon does not exist. However, at hospitals with average work environment and best work environment, the phenomenon exists. It means that the greater the number of nurses, the lower the inpatient mortality and failure-to-rescue. The effect of 10% of more nurses decrease the odds on both inpatient mortality and failure-to-rescue in all hospitals, regardless of their work environment, by about 4%.

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Duffield et al (2011) found that higher levels of registered nurses (qualified nursing staff) were associated with lower levels of adverse events. Also, it is found that when workload increased because of increasing number of patients and when nurses experienced emotional abuse, quality of care reduced.

Theme 3

The relationship between nurse practice environment and quality of care may be mediated by factor such as perceived workload, decision latitude, social capital and three dimensions of work engagement, burnout (Van Bogaert et al, 2014a; Van Bogaert et al, 2013).

The three components of nurse practice environment are nurse-physician relationship, nurse management at the unit level and hospital management and organizational support. Van Bogaert et al (2014a) found that while there is a direct relationship between nurse management at the unit level and nurse-assessed quality of care, the relationship between the other two components of nurse practice environments and nurse-assessed quality of care are mediated by factors such as workload, decision latitude, social capital, vigor, dedication, absorption. The complicated relationship is presented in figure 2 above. It can be argued that the most important factor that affect nurse-assessed quality of care is nurse management at the unit level. In other words, it is the most important factor that is to be modified.

Similarly, in Van Bogaert et al (2013), the relationship between the three components of nurse practice environment and nurse-assessed quality of care are mediated by workload and the three components of burnout, namely, emotional exhaustion, depersonalization and personal accomplishment. Similarly, nurse management at the unit level directly affect nurse-assessed quality of care at a magnitude of 57%. It makes it the most important factor among the nurse practice environment.

Theme 4

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Better workplace empowerment and programmes to improve nurse practice environment leads to job satisfaction, organizational commitment, improvement in nurse-doctor relationship, nurse management, hospital management-organizational support, nurse-reported quality of care (Spence Laschinger et al, 2009; Stimpel et al, 2014; Van Bogaert et al, 2014).

Spence Laschinger et al (2009) found that workplace empowerment, lesser workplace incivility and lesser burnout explained significant variance in job satisfaction, organizational commitment and turnover intention. Empowerment, supervisor incivility and cynicism most strongly predicted job dissatisfaction and low commitment while emotional exhaustion, cynicism and supervisor incivility most strongly predicted turnover intentions (Spence Laschinger et al, 2009).

Stimpfel et al (2014) found that Magnet recognition, a recognition for good nursing practice environment, is related to better nurse-reported quality of care. Besides, the professional practice environment mediates the relationship between Magnet status and quality of care.

Van Bogaert et al (2014) also found that the productive ward program, a programme that focuses on transformational nursing leadership, structural nurse empowerment and professional practice, is associated with better nurse-physican relationships, nurse management, hospital management-organizational support and nurse-reported quality of care.

6.5. Chapter conclusion

This chapter discusses the relevant themes identified through the analysis of the ten articles chosen. All research articles point out that improvement of nurse practice environment improves quality of care and/or burnout. The next chapter is about a discussion of recommendations on how to improve nurse practice environment.

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