

1 **Examining the Association Between Evidence-Based Practice and the Nurse-Patient**

2 **Therapeutic Relationship in Mental Health Units: A Cross-Sectional Study**

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4

1 **ABSTRACT**

2 **Aims:** To examine the relationship between the dimensions of evidence-based practice and the
3 therapeutic relationship as well as to predict the quality of the therapeutic relationship from these
4 dimensions among nurses working in mental health units.

5 **Design:** A cross-sectional design.

6 **Methods:** Data were collected between February - April 2018 via an online form completed by
7 nurses working at 18 mental health units. Multiple linear regressions were used to examine the
8 relationship between the dimensions of evidence-based practice and therapeutic relationship.
9 Questionnaires were completed by 198 nurses.

10 **Results:** Higher levels of evidence-based practice were a significant predictor of a higher quality
11 therapeutic relationship (β : 2.276; 95% CI: 1.30-3.25). The evidence-based practice factor which
12 most influenced an improved therapeutic relationship was the nurses' attitude (β : 2.047; 95% CI:
13 0.88-3.21). The therapeutic relationship dimension which was most conditioned by evidence-
14 based practice dimensions was agreement on tasks, which was most favorable with a better
15 attitude (β : 0.625; 95% CI: 0.09-1.16) as well as greater knowledge and skills for evidence-based
16 practice (β : 0.500; 95% CI: 0.08-0.93).

17 **Conclusion:** In mental health settings, the therapeutic nurse-patient relationship is positively
18 enhanced by evidenced-based practice and the nurse's level of experience, with a great influence
19 on shared decision making.

20 **Impact:** This research sought to examine the relationship between the evidence-based practice
21 and the therapeutic relationship in mental health nursing. This study demonstrates that an
22 improved attitude and knowledge of evidence-based practices of mental health nurses increases

1 shared decision making with patients, which is a basic requirement for person-centered care.
2 Because the therapeutic relationship is considered the backbone of nursing practice in mental
3 health units, this research will impact on both mental health nurses and mental health unit
4 managers.

5 **Key words:** evidence-based practice, quantitative approaches, mental health, nurse patient
6 relationships, practice nursing

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1 **INTRODUCTION**

2 The international literature recognizes that the therapeutic relationship is an essential component
3 of mental health nursing (Moreno-Poyato et al., 2016; Peplau, 1988; Vahidi et al., 2018)
4 improving person-centered care and shared decision making (Hamovitch, Choy-Brown, &
5 Stanhope, 2018). Furthermore, it is known that evidence-based practice enables the best clinical
6 decisions to be made about patient care, considering factors such as nurses' experience and users'
7 expectations (DiCenso, Cullum, & Ciliska, 1998). In this regard, it seems clear that nurses with
8 greater competence in evidence-based practice should establish a better therapeutic relationship
9 with patients.

10 **Background**

11 Via the therapeutic relationship, nurses are able to positively impact the health of people with
12 mental health problems (McAndrew, Chambers, Nolan, Thomas, & Watts, 2014; Moreno-
13 Poyato, Delgado-Hito, Leyva-Moral, Casanova-Garrigós, & Montesó-Curto, 2019). Furthermore,
14 the establishment of an appropriate therapeutic relationship has been empirically demonstrated to
15 be associated with improved health outcomes for patients (Kelley, Kraft-Todd, Schapira,
16 Kossowsky, & Riess, 2014). Furthermore, the therapeutic relationship also increases the
17 effectiveness of any clinical practice intervention performed by nurses in acute mental health
18 units (McAndrew et al., 2014). In terms of therapeutic value, via their interactions, nurses can
19 provide a safe place, allowing the patient to overcome emotional resistance and move toward
20 deep self-knowledge that often results in change (McAndrew et al., 2014). Along these lines, it
21 was Peplau (1988) in the 1950s who referred to the role of the nurse as a leader who should help
22 the patient to take on tasks through a relationship of cooperation and active participation, thus
23 representing a true therapeutic alliance (Bordin, 1979). In turn, Bordin (1979) pointed out that

1 the main components of the therapeutic alliance are the agreement between the therapist and the
2 patient on the treatment objectives, the tasks to be carried out and, finally, the affective bond that
3 is established between the patient and the therapist. To build effective interpersonal relationships,
4 Peplau (1988; 1997) described nursing care as an interpersonal process of therapeutic nature.
5 Concretely, a human relationship between a sick person or a person in need of help and a nurse
6 who is properly trained to recognize and respond to the person's need for help. The therapeutic
7 interpersonal relationship described by Peplau (1988) is based on three phases: orientation,
8 working and termination. During the orientation phase, the individual perceives a need and seeks
9 professional assistance. In this case, the nurse helps the patient to recognize, understand and
10 assess his or her problem and situation. Subsequently, the working phase represents most of the
11 time that the nurse spends with the patient, where the nurse facilitates the exploration of feelings
12 to help the patient cope with the illness and to be able to move on to the last phase, the resolution
13 phase, which marks the satisfaction of old needs and the emergence of new needs to be fulfilled
14 (Peplau, 1988).

15 Multiple studies provide evidence of the attributes required for the therapeutic relationship and
16 their meaning (Felton, Repper, & Avis, 2018; Harris & Panozzo, 2019; Hartley, Raphael, Lovell,
17 & Berry, 2019; McAllister, Robert, Tsianakas, & McCrae, 2019; Moreno-Poyato et al., 2016).
18 However, there is evidence of underuse of the same by mental health nurses (Hamaideh, 2017;
19 Youssef et al., 2018). Clearly, it follows that knowledge and implementation of evidence-based
20 empirical and theoretical precepts of the therapeutic relationship should facilitate and improve
21 the implementation of therapeutic relationship in clinical practice in mental health units.

22 Evidence-based practice has been defined as the organized use of the best available evidence
23 (DiCenso et al., 1998). Some authors consider this as being an essential element in the provision

1 of optimal high quality care (Ramos-Morcillo, Fernández-Salazar, Ruzafa-Martínez, & Del-Pino-
2 Casado, 2015; Stevens, 2013). Indeed, the implementation of EBP has been associated with
3 improved health outcomes, decreased health care expenditure and increased nursing staff
4 satisfaction (Moore, 2017; Ramos-Morcillo et al., 2015). Over recent years, certain difficulties
5 have been observed in the implementation of this empirical knowledge in the complex clinical
6 reality of health services (Correa et al., 2020). Thus, limitations have been identified for its use
7 both at the individual level and by organizations at large. For professionals, lack of time, a heavy
8 workload and lack of knowledge represent major difficulties (Correa et al., 2020; Stevens, 2013).
9 Furthermore, the lack of human and material support and insufficient leadership resources are the
10 main organizational limitations identified (Correa et al., 2020; Warren et al., 2016). In this
11 regard, it should be noted that mental health nurses must overcome certain barriers that they
12 encounter on a daily basis to implement EBP (Yadav & Fealy, 2012; Youssef, Alshraifeen,
13 Alnuaimi, & Upton, 2018). According to Alzayyat (2014), these barriers are due to the nature of
14 the evidence, the contribution of mental health nurses involved in research, the personal
15 characteristics of these nurses and organizational factors.

16 In the field of mental health, nursing studies have shown that the incorporation of evidence-
17 based practice in clinical practice increases the empathy of nurses and improves the factors that
18 contribute towards establishing a therapeutic alliance with patients (Moreno-Poyato et al., 2018),
19 as well as increasing the nurses' self-confidence, allowing them to reflect on their practice,
20 present ideas and acquire new knowledge (Moreno-Poyato, Delgado-Hito, Leyva-Moral,
21 Casanova-Garrigós, & Montesó-Curto, 2019). However, these studies have not specifically
22 evaluated the contribution between the EBP and its dimensions and the therapeutic relationship
23 from a quantitative point of view (Moreno-Poyato et al., 2018; Moreno-Poyato et al., 2019).

1 Considering the impact of EBP on the therapeutic relationship in nursing practice in general and
2 understanding the therapeutic relationship as the essence of nursing practice in mental health
3 (Moreno-Poyato et al., 2016; Felton, Repper and Avis, 2018), it is imperative to study the impact
4 of EBP on this relationship in mental health units. Further knowledge is clearly necessary,
5 considering that the work performed by mental health nurses in the context of the therapeutic
6 relationship must be translated into practice following the established guidelines of empirical-
7 theoretical precepts based on EBP. No studies to date have evaluated the relationship between
8 both constructs. It is therefore essential to research the association between the different
9 dimensions of EBP and the therapeutic relationship and its factors, while considering the
10 relationship between EBP and the socio-demographic and professional characteristics of nurses,
11 to develop strategies to improve the quality of the nurse-patient therapeutic relationship in
12 mental health units.

13 **THE STUDY**

14 **Aims**

15 The aims of this study were to examine the relationship between the dimensions of evidence-
16 based practice and the therapeutic relationship as well as to predict the quality of the therapeutic
17 relationship from these dimensions among nurses working in mental health units.

18 **Design**

19 This cross-sectional, correlational study sought to explore the association between dimensions
20 for EBP and the level of the therapeutic relationship among mental health unit nurses. The data
21 collected for this study was part of the first phase of a mixed-method project entitled

1 MiTRCIME.CAT, which aimed to improve the therapeutic relationship by implementing
2 evidence-based practice in acute mental health units in Catalonia (Spain).

3 **Sample/Participants**

4 The 21 mental health hospitalization units forming part of the Catalanian Network of Mental
5 Health were informed of this study, of which 18 units agreed to participate. All the nurses
6 employed at the collaborating units were invited to participate in the study (n=235). Resident
7 nurses who were on clinical placements were excluded from the study. Finally, 198 nurses
8 participated in the study. Considering that, to perform a multiple linear regression, it is
9 recommended to introduce one variable for every 10-15 individuals (Austin & Steyerberg, 2015;
10 Green, 1991) and that in our study, nine variables were collected for each individual, the final
11 sample size was considered appropriate.

12 **Data collection**

13 First, the director of each institution, plus the research team, selected a nurse coordinator for each
14 center who fulfilled the conditions of leadership and credibility and agreed to participate
15 voluntarily in the study. Thereafter, to recruit participants from each unit, the principal
16 investigator presented the research project and its aims to each center via informational sessions
17 with nurses. Thereafter, the nurse coordinators were placed in charge of recruiting the
18 participating nurses and gathering the informed consent forms and email addresses to provide
19 them with a confidential participant code, together with a link to the electronic form via the
20 google forms platform to gather the data during the first phase of the study. The data collection
21 for this part of the study took place between February - April 2018. The electronic form included
22 a questionnaire which gathered nurses' socio-demographic and professional data and
23 measurement tools, including the Work Alliance Inventory - Short (WAI-S: Horvath &

1 Greenberg, 1989) and the Evidence-Based Practice Questionnaire (EBPQ-19: Upton & Upton,
2 2006).

3 **Ethical considerations**

4 This study was approved by the Research Ethics Committees of all the participating hospitals
5 and participating nurses signed a consent form. The consent forms and the completed
6 questionnaire were given to participants as separate forms and data were treated confidentially.

7 **Data analysis**

8 The quantitative variables were expressed as the mean and the standard deviation. The
9 categorical variables were expressed as the number and percentage. In the bivariate analysis, the
10 association between the quantitative variables was evaluated using the Pearson's correlation
11 coefficient. The relationship between quantitative and categorical variables was determined using
12 the Student's t-test. Finally, multiple linear regression models were used for the analysis of the
13 therapeutic relationship according to the EBPQ and by introducing the sociodemographic profile
14 and professional variables of nurses as covariates. The choice of covariates was made based on
15 possible theoretical associations between the main factor (EBP) and these variables. The
16 sociodemographic and professional variables introduced in each of the models were gender,
17 years of mental health experience, mental health specialty and highest education. Age was not
18 included to avoid redundancy and multicollinearity. Statistically significant results were
19 established with a p-value of <0.05 . The statistical analyses were calculated using the SPSS V
20 22.0 statistical package (SPSS Inc., Chicago, IL).

21 **Validity and reliability**

1 The level of the therapeutic relationship was measured using the Working Alliance Inventory-
2 Short (WAI-S). The short version of this scale contains 12 items, and each item is assessed by
3 the health professional based on a scale ranging from 1 (never) to 7 (always). The scoring range
4 of the overall WAI-S is 12-84 points. The higher the score, the higher the therapeutic
5 relationship. This questionnaire has three dimensions: (i) bond: the bond between patient and
6 nurse, which includes aspects such as empathy, mutual trust and acceptance; (ii) objectives: the
7 agreement between patient and nurse on the goals of therapy (i.e. mutual acceptance of what the
8 intervention aims to achieve); and (iii) tasks or activities: the agreement between patient and
9 nurse on the tasks or activities to be carried out. The Spanish version of the WAI-S has good
10 reliability and validity, with a Cronbach alpha of 0.93 (Andrade-González & Fernández-Liria,
11 2015). In the case of our sample, the Cronbach's alpha value for the total scale was 0.71, the
12 subscales for tasks and bonding presented internal consistencies of 0.73 and 0.56, respectively,
13 whereas the subscale objectives had a lower internal consistency of 0.31.

14 Evidence-based practice was measured using the Evidence-Based Practice Questionnaire
15 (EBPQ-19) developed by Upton & Upton (2006). The EBPQ-19 Questionnaire consists of 19
16 items, structured in three dimensions: a) practice, which includes six items (e.g., 'Formulated a
17 clearly answerable question as the beginning of the process towards filling this gap or 'Tracked
18 down the relevant evidence once you have formulated the question'); b) attitude with 3 items
19 (e.g., 'I welcome questions on my practice' or 'Evidence-based practice is fundamental to
20 professional practice'); and c) professional knowledge and skills for evidence-based practice
21 with 10 items (e.g., 'Knowledge of how to retrieve evidence' or 'Ability to critically analyze
22 evidence against set standards'). Each item scores from 1-7, with 1 being the least favorable
23 value and 7 the most favorable in terms of competence in the application of EBP. The scale

1 ranges from 19-133 points. We used the Spanish adaptation of this questionnaire validated by
2 Pedro Gómez et al. (2009) with Cronbach's alpha values of 0.89, 0.72 and 0.92 for each of the
3 factors. In our sample, the Cronbach's alpha values were 0.92 for the total scale and 0.88, 0.50
4 and 0.92 for each of the factors.

5 **RESULTS**

6 Of the 235 nurses who were invited to participate, 198 nurses agreed to participate in the study
7 and answered the form. The average age of participants was 33.8 years (SD 9.23). Only 27.5 %
8 were male and almost 80 % of the nurses lacked the official qualification of mental health nurse.
9 One third of the nurses (33.2%) had official postgraduate training (Masters or PhD studies). The
10 mean number of years' experience in mental health was 7.9 years (SD 7.45). Regarding the
11 relationship between the nurses' socio-demographic and professional variables and the EBPQ
12 and WAI, experience in mental health was associated with a greater therapeutic alliance ($r=$
13 $0.221, P=0.002$) whereas no association was found with a greater EBPQ. Furthermore,
14 associations between higher academic level and greater competence for EBP were found ($t=$ -
15 $2.957, P=0.003$). Likewise, higher academic level was associated with greater therapeutic
16 alliance ($t=$ - $2.222, P=0.027$). In contrast, specific training as a mental health nurse specialist
17 was not related with either EBP or the therapeutic alliance (Table 1).

18 A bivariate analysis was conducted to study the association between the dimensions of the EBP
19 competence of nurses and the therapeutic alliance and associated factors. A significant positive
20 correlation was observed between most dimensions and the total scores of both scales.

21 Particularly noteworthy were the positive associations between competence for EBP and the
22 relationship of the same with the level of the therapeutic alliance, specifically regarding the
23 factor for agreement on tasks (Table 2).

1 To determine whether the level of therapeutic alliance could be explained, firstly, by the
2 competence for EBP and the socio-professional factors of the nurses and secondly, incorporating
3 the dimensions of competence for EBP and the socio-professional factors, two linear regressions
4 were calculated (Table 3). Model 1 was significant ($F(5, 192) = 8.568, P < 0.0001$), with the
5 variables incorporated into the model representing 16.1% of the variation in the level of nurses'
6 therapeutic alliance. It should be noted that competence for EBP was the most influential
7 variable in this first model ($\beta = 2.276, P < 0.0001$). The second model ($F(7, 190) = 6.972,$
8 $P < 0.0001$) revealed that the most influential dimension for therapeutic alliance was the attitude
9 towards EBP ($\beta = 2.047, P = 0.001$). This model explained 17.5% of the variation of the level of
10 the therapeutic relationship.

11 Subsequently, we examined the influence of the competence dimensions for EBP and each of the
12 factors of the therapeutic alliance. For this purpose, linear regressions were calculated once
13 again, adjusted for nurses' socio-professional variables. The models that emerged from
14 examining the influence of EBP on the bond and the agreement on therapy goals between nurses
15 and their patients, were also significant, although they only explained 10% and 5% of the
16 changes in the bond ($F(7, 190) = 4.034, P < 0.0001$) and in the agreement on therapy goals ($F(7,$
17 $190) = 2.558, P = 0.015$). In both models, the only influential dimension was attitude towards
18 EBP, with $\beta = 0.686 (P = 0.005)$ and $\beta = 0.735 (P = 0.014)$ respectively. However, when examining
19 the influence of EBP dimensions on task agreement, once again a model was obtained which
20 explained over 16% of the changes in the agreement on tasks ($F(7, 190) = 6.610, P < 0.0001$). In
21 this model, experience ($\beta = 0.096, P < 0.0001$) and gender ($\beta = 0.872, P = 0.027$) were significant
22 socio-professional variables for nurses. In addition, in this model it is noteworthy that attitude (β

1 =0.625, $P=0.023$) and knowledge/skills for EBP ($\beta =0.500$, $P=0.022$) were predictor variables
2 (Table 4).

3 **DISCUSSION**

4 The aim of this study was to examine the relationship between the dimensions of EBP among
5 mental health nurses and the therapeutic relationship they establish with their patients. According
6 to our findings, it is worth highlighting that a greater EBP improves the therapeutic relationship
7 established by nurses in mental health units. Although this relationship appears to be evident
8 from a theoretical-conceptual point of view, since therapeutic relationship has traditionally been
9 considered as the axis of care in mental health nursing (Felton et al., 2018; Harris & Panozzo,
10 2019; Peplau, 1988), this finding enables us to confirm the association between both constructs,
11 from a quantitative point of view. This reinforces the statement that the therapeutic relationship
12 is not only based on an experiential construction of a relationship between nurse and patient
13 (McAndrew et al., 2014), rather it also improves when the nurse shows greater competence for
14 EBP.

15 In terms of the specific characteristics of nurses, it should be noted that, unlike other studies, the
16 nurses who showed the greatest competence for EBP were those with the highest educational
17 level (Moore, 2017; Rojjanasrirat & Rice, 2017; Wonder et al., 2017). However, in line with
18 other previous studies, the nurses' experience was not associated with improved EBP (Moore,
19 2017; Rojjanasrirat & Rice, 2017; Wonder et al., 2017). This fact is remarkable given that
20 experience is a factor associated with EBP from a theoretical point of view (DiCenso et al.,
21 1998) and some studies have also confirmed this association (Hamaideh, 2017; Zhou, Hao, Guo,
22 & Liu, 2016). Likewise, no differences were found regarding whether the nurses had training in
23 the specialty of mental health nursing. We were unable to compare this finding with other studies

1 due to a lack of literature in this area, however, it raises the question of whether training for
2 mental health specialists in our context is including content on EBP.

3 Regarding the association between EBP dimensions and the therapeutic relationship, the
4 dimension which most influenced the overall therapeutic relationship was the attitude of nurses
5 towards EBP. In fact, the attitude towards EBP is often the highest rated factor by nurses in most
6 settings and specialties (Cavazos-Rehg et al., 2014; Moore, 2017; Ramos-Morcillo et al., 2015;
7 Wonder et al., 2017; Zhou et al., 2016). In addition, nurses' beliefs and attitudes about the
8 importance and value of EBP have been identified as one of the most important attributes for
9 implementing EBP (Schaefer & Welton, 2018). When nurses have positive attitudes on this
10 topic, it is easier for them to implement changes in their daily practice (Saunders & Katri
11 Vehviläinen-Julkunenb, 2016). The attitude of the nurse towards the recipient of their care is an
12 inherent part of the profession, which must be focused on patients' needs, as negative attitudes
13 prevent the establishment of a quality therapeutic relationship (Wahl & Aroesty-Cohen, 2010).

14 Teaching future professionals should not reinforce certain negative attitudes but rather create
15 strategies within the studies that help generate attitudes of greater acceptance and understanding
16 of the person. However, neither practice nor knowledge explained improvements in the overall
17 therapeutic relationship. Indeed, both knowledge and practice of EBP were the dimensions that
18 scored the lower mean scores by the nurses. These results could be due to the difficulties
19 described in the literature affecting EBP in mental health nursing such as lack of training, lack of
20 time and lack of resources for EBP, factors that directly affect both nurses' knowledge and the
21 use of evidence in clinical practice (Alzayyat, 2014; Hamaideh, 2017; Yadav & Fealy, 2012).

22 The analysis of the association between EBP dimensions and each of the dimensions of the
23 therapeutic relationship, revealed a significant association between the attitude towards EBP and

1 experience and each of the dimensions of the therapeutic relationship. The results indicate that a
2 better attitude towards EBP allows the establishment of a greater bond of trust with the patient in
3 the context of the therapeutic relationship, an element with a strong attitudinal component
4 (Bordin, 1979) and basic in the first phase of the therapeutic relationship (Peplau, 1997). In this
5 sense, a higher score in the attitude towards EBP represents nurses who are open to dialogue and
6 change, who do not judge others when they criticize their actions and who try to integrate
7 opinions and knowledge as part of a possible improvement. In short, a nurse who accepts
8 comments and does not judge these, who adopts the patients' perspective and accepts it,
9 strengthening the link formed in the nurse patient therapeutic relationship (Moreno-Poyato &
10 Rodríguez-Nogueira, 2020). However, the nurses' experience had more weight in explaining the
11 improvements in factors such as agreement on goals and tasks. It should also be noted that a
12 better agreement on the tasks was influenced by attitude and by a greater knowledge and skills
13 for EBP. Consequently, a higher level of knowledge and skills of EBP nurses is more relevant in
14 the working phase during the therapeutic relationship process (Peplau, 1997). This finding is
15 particularly relevant as it confirms that knowledge and skills for EBP are necessary for person-
16 centered care and shared decision-making. These are aspects that positively condition the
17 therapeutic relationship and are directly related to the trend in current mental health care that
18 focuses on the paradigm of autonomy and the recovery model which recognizes the importance
19 of person-centered care. The main elements of the recovery model include a greater involvement
20 of the service users, a vision of the person beyond his or her illness and the facilitating treatment
21 selection. In short, the recovery model aims to reverse the role of the service user from being a
22 follower to another where they can lead, change and direct their own care (Newman, O'Reilly,
23 Lee, & Kennedy, 2015; Smith & Williams, 2016).

1 **Limitations**

2 This study has several limitations. First, the cross-sectional design did not allow us to detect
3 changes in nurses' perceptions over time, nor make causal inferences. Second, it is important to
4 consider that the therapeutic relationship was assessed as a general measure and, this was related
5 with nurses' overall perceptions of the therapeutic relationship, which could have differed from
6 those of their patients. Finally, although the purpose of the study was not to validate the scales
7 used, it should be noted that the internal consistency of the objectives subscale of the WAI-S in
8 our study was low. In contrast, one of the study strengths was the rate of participation among
9 nurses in the participating institutions. Therefore, the results can be generalized to the nurses of
10 mental health units in Spain. It is likely that the results can be extrapolated to other countries
11 where the training plans for nurses and the care settings in mental health units are similar to
12 those of this study. Furthermore, we identified specific relationships between the dimensions of
13 EBP and the therapeutic relationship and, although the degree of influence from the predictive
14 point of view was not high, it should be considered that taking into account that the therapeutic
15 relationship is a multifaceted construct, the amount of explained variance is significant and could
16 be considered to be high. These findings suggest the need to perform further in-depth studies of
17 the factors that influence the quality of the therapeutic relationship. In addition, it would be
18 advisable to replicate the study on an international level to confirm the results and to elaborate
19 strategies to improve EBP and, consequently, improve the quality of the therapeutic relationship.

20 **CONCLUSION**

21 The results of our study contribute to a greater understanding of the relationship between the
22 dimensions of evidence-based practice and therapeutic relationship in nurses working in mental
23 health units. The results confirm that increased evidence-based practice improves the

1 establishment of the nurse-patient therapeutic relationship in mental health units. In general, the
2 association of nurses' attitudes with their experience in therapeutic relationship is noteworthy.
3 Specifically, an improved nurse attitude and knowledge of evidence-based practice increases
4 shared decision making with patients, which is basic to person-centered care. An improved
5 attitude towards EBP is likely to help nurses working in mental health units to apply the
6 knowledge acquired in daily clinical practice, improving care through new evidence-based
7 practices.

8

1 **Conflict of interest statement**

2 No conflict of interest has been declared by the authors.

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3

TABLE 1: Relationship of nurses' socio-demographic and professional variables with the EBPQ and WAI-S

Variables	n	Practice			Attitude			Knowledge/Skills			EBPQ			WAI-S		
		Correlation coefficient (r)	Mean (SD)	<i>P</i>	Correlation coefficient (r)	Mean (SD)	<i>P</i>	Correlation coefficient (r)	Mean (SD)	<i>P</i>	Correlation coefficient (r)	Mean (SD)	<i>P</i>	Correlation coefficient (r)	Mean (SD)	<i>P</i>
Age (years)	198	-0.024		0.742 ¹	0.029		0.684 ¹	-0.085		0.235 ¹	-0.040		0.577 ¹	0.143		0.044 ¹
Years of MH experience	198	-0.015		0.836 ¹	- 0.023		0.750 ¹	-0.013		0.861 ¹	-0.020		0.782 ¹	0.221		0.002
Sex																
Female	142		4.5 (1.2)	0.525 ²		5.7 (0.7)	0.763 ²		4.5 (1.0)	0.364 ²		4.9 (0.8)	0.979 ²		62.4 (5.9)	0.485 ²
Male	56		4.4 (1.2)			5.7 (0.7)			4.7 (0.9)			4.9 (0.8)			61.7 (5.5)	
Highest education																
Bachelor's degree	132		4.4 (1.2)	0.104 ²		5.6 (0.7)	0.258 ²		4.4 (1.0)	<0.001 ²		4.8 (0.8)	0.003 ²		61.6 (6.0)	0.027 ²
PhD or master's degree	66		4.7 (1.2)			5.8 (0.7)			5.0 (0.9)			5.2 (0.8)			63.5 (5.1)	
MH Specialty																
Yes	39		4.6 (1.2)	0.753 ²		5.7 (0.7)	0.903 ²		4.4 (1.2)	0.171 ²		4.9 (0.9)	0.697 ²		62.5 (5.9)	0.720 ²
No	159		4.5 (1.2)			5.7 (0.7)			4.6 (1.0)			4.9 (0.8)			62.1 (5.8)	

EBPQ, Evidence Based Practice Questionnaire; MH, mental health; SD, Standard deviation; WAI-S, Working Alliance Inventory Short.

¹: Pearson' correlation coefficient; ²: Student's t test

TABLE 2: Relationship between the EBPQ and the level of therapeutic relationship of nurses

Variable	Practice	Attitude	Knowledge/Skills	EBPQ
Bond	0.194**	0.273***	0.244***	0.287***
Objectives	0.089	0.189**	0.058	0.127
Tasks	0.250***	0.265***	0.308***	0.340***
WAI-S	0.233***	0.317***	0.264***	0.328***

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$. **EBPQ**, Evidence Based Practice Questionnaire; **WAI-S**, Working Alliance Inventory Short.

TABLE 3: Multiple linear regression examining the association between the EBPQ and the therapeutic relationship (n = 198)

Variable	Model 1 (Adj R^2 = 0.161)			Model 2 (Adj R^2 = 0.175)		
	β	95 % CI	<i>P</i> -value	β	95 % CI	<i>P</i> -value
Gender (female)	1.135	-0.554 to 2.823	0.187	1.142	-0.538 to 2.822	0.181
Years of MH experience	0.222	0.107 to 0.336	<0.0001	0.224	0.111 to 0.338	<0.0001
Highest education (PhD or master's degree)	1.355	-0.277 to 2.987	0.103	1.427	-0.225 to 3.079	0.090
MH Nursing Specialty (no)	1.430	-0.698 to 3.557	0.187	1.473	-0.658 to 3.604	0.174
EBPQ	2.276	1.303 to 3.250	<0.0001			
Practice				0.285	-0.484 to 1.054	0.465
Attitude				2.047	0.876 to 3.217	0.001
Knowledge/Skills				0.619	-0.312 to 1.550	0.191

EBPQ, Evidence Based Practice Questionnaire; **CI**, confidence interval; **MH**, mental health

TABLE 4 Association between nurses' characteristics and EBPQ's subscales with WAI's subscales (n = 198)

Dependent variables	Bond (Adj $R^2 = 0.097$)			Goals (Adj $R^2 = 0.052$)			Tasks (Adj $R^2 = 0.166$)		
	β	95 % CI	<i>P</i> -value	β	95 % CI	<i>P</i> -value	β	95 % CI	<i>P</i> -value
Gender (female)	0.240	-0.452 to 0.931	0.495	0.031	-0.808 to 0.870	0.943	0.872	0.099 to 1.645	0.027
Years of MH experience	0.050	0.003 to 0.097	0.037	0.079	0.022 to 0.135	0.007	0.096	0.044 to 0.148	< 0.001
Highest education (PhD or master's degree)	0.529	-0.151 to 1.209	0.126	0.564	-0.261 to 1.389	0.179	0.333	-0.426 to 1.093	0.388
MH Nursing Specialty (no)	0.383	-0.495 to 1.260	0.391	0.112	-0.952 to 1.176	0.836	0.978	-0.002 to 1.958	0.05
Practice	0.058	-0.258 to 0.375	0.718	0.071	-0.313 to 0.455	0.715	0.156	-0.198 to 0.510	0.385
Attitude	0.686	0.204 to 1.168	0.005	0.735	0.151 to 1.320	0.014	0.625	0.087 to 1.164	0.023

Knowledge/Skills	0.267	-0.117 to 0.650	0.172	-0.147	-0.612 to 0.318	0.533	0.500	0.072 to 0.928	0.022
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EBPQ, Evidence Based Practice Questionnaire; **WAI**, Working Alliance Inventory; **CI**, confidence interval; **MH**, mental health