ปัจจัยทำนายการนำหลักฐานเชิงประจักษ์ไปใช้สำหรับการจัดการภาวะตกเลือดหลังคลอดในพยาบาลห้องคลอด โรงพยาบาลชุมชน
Factors Predicting the Evidence-Based Practice Implementation for Postpartum Hemorrhage Management among Intrapartum-Nurses in Community Hospitals

นิพนธ์ต้นฉบับ

Original Article

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บทคัดย่อ

วัตถุประสงค์: เพื่อทดสอบอิทธิพลของปัจจัยในการทำนายการนำหลักฐานเชิงประจักษ์ไปใช้จัดการภาวะตกเลือดหลังคลอดในพยาบาลห้องคลอดโรงพยาบาลชุมชน **วิธีการศึกษา:** การศึกษาแบบภาคตัดขวางนี้มีกลุ่มตัวอย่างคือพยาบาลห้องคลอดที่ปฏิบัติงานในโรงพยาบาลชุมชนสังกัดกระทรวงสาธารณสุขจำนวน 275 ราย สุ่มตัวอย่างด้วยวิธีแบบหลายขั้นตอน เก็บข้อมูลตั้งแต่เดือนมีนาคมถึงมิถุนายน พ.ศ. 2562 กลุ่มตัวอย่างตอบแบบสอบถามด้วยตนเอง วิเคราะห์ข้อมูลด้วยค่าสถิติเชิงพรรณนาและการวิเคราะห์ถดถอยพหุคูณ **ผลการศึกษา:** ตัวแปรที่มีอิทธิพล ได้แก่ บรรยากาศองค์กรสำหรับการนำหลักฐานเชิงประจักษ์ไปใช้ตามด้วยจำนวนปีของการทำงานในงานห้องคลอด การปฏิบัติงานในโรงพยาบาลชุมชนขนาดใหญ่ การยอมรับนวัตกรรม การสนับสนุนในการนำหลักฐานเชิงประจักษ์มาใช้ขององค์กร และการรับรู้อุปสรรคในการนำหลักฐานเชิงประจักษ์มาใช้ (β = 0.261, 0.222, 0.206, 0.166, 0.138 และ -0.128, ตามลำดับ, *P*-value < 0.05 ทั้งหมด) ส่วนการรับรู้คุณลักษณะของแนวปฏิบัติทางคลินิกเป็นตัวแปรเดียวที่ไม่มีอิทธิพล โดยตัวแปรทั้งหมดร่วมกันอธิบายความแปรปรวนของการนำหลักฐานเชิงประจักษ์ไปใช้ได้ร้อยละ 27.6 (R^2 = 0.276, *P*-value < 0.01) **สรุป:** พบปัจจัยที่ทำนายการนำหลักฐานเชิงประจักษ์ไปใช้จัดการภาวะตกเลือดหลังคลอดในพยาบาลห้องคลอดโรงพยาบาลชุมชน ซึ่งผู้บริหารการพยาบาลอาจนำไปพัฒนาโปรแกรมหรือกิจกรรมส่งเสริมการใช้หลักฐานเชิงประจักษ์เพื่อให้เกิดผลลัพธ์ทางคลินิกที่ดีในการป้องกันและจัดการภาวะตกเลือดหลังคลอด

คำสำคัญ: การนำหลักฐานเชิงประจักษ์ไปใช้, ภาวะตกเลือดหลังคลอด, พยาบาลห้องคลอด

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Abstract

Objective: To examine factors predicting the implementation of evidence-based practices (EBPs) for postpartum hemorrhage (PPH) management among intrapartum nurses in community hospitals. **Method**: In this cross-sectional study, a multi-stage sampling technique was used to recruit a sample of 275 intrapartum nurses in community hospitals from March to June 2019. Data were collected using self-administered questionnaires. Descriptive statistics and multiple regression were carried out to analyze data. **Results**: Significant predictors were organizational climate for EBPs implementation, followed by years of experiences in delivery room, large community hospital, personal innovativeness, organizational support and perceived barriers (β = 0.261, 0.222, 0.206, 0.166, 0.138 and -0.128, respectively, *P*-value < 0.05 for all). Perceived characteristic of clinical practice guideline was not a significant predictor. These six factors altogether could explain 27.6% of the variance of implementation of EBP for management of PPH (R^2 = 0.276, *P*-value < 0.01). **Conclusion**: Factors predicting the implementation of EBPs for PPH management among intrapartum nurses in community hospitals were identified. The findings could be useful in developing nursing intervention to enhance EBPs implementation to achieve clinical outcomes of PPH prevention and management.

Keywords: Implementation of evidence-based practice, postpartum hemorrhage, intrapartum-nurse

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Introduction

Postpartum hemorrhage (PPH) is a significant contributor to severe maternal morbidity and long-term disability.[1] More than half of all maternal deaths, approximately 80 percent, occur within 24 hours of delivery with excessive bleeding being most commonly reported cause of death.[2] Thus, maternal deaths represent an important problem arising from risks attributable to pregnancy and childbirth as well as poor quality of care and the health service system, even though PPH is a preventable condition. Recent research indicates that 54 to 93% of these hemorrhage deaths may have been preventable.[3] A high proportion around 72 – 90% of the morbidities related to obstetric hemorrhage is considered preventable if adequately managed through early recognition and adequate interventions in the early stages.[4] PPH is also the leading cause of death in Thailand. Several interventions have aimed at maintaining or improving the quality of PPH care by maternal and child health care services in Thailand.[4] However, while substantial progress has been made toward improving the existing interventions for managing PPH, the

burden of PPH persists. Thus, the main concern should be determining the factors influencing PPH management.

The evidence-based practice (EBPs) for prevention and management of PPH have been summarized and are currently available through clinical practice guidelines. Adoption and implementation of the guideline recommendations for PPH prevention and management can result in a decline in PPH mortality.[5,6] Although the development and dissemination of evidence-based PPH guidelines are intended to assist professionals and patients in the prevention and management of PPH-care, this effort falls short in terms of closing the existing gap between guidelines, course instructions and daily practice.[7] There is also a substantial evidence indicating major gaps in the clinical area between existing and actual practice. Reports from confidential inquiries into maternal deaths show that most PPH-related deaths involve delays and sub-standard care in the diagnosis and management of hemorrhage.[8] Substandard care is regularly mentioned concerning women with PPH.[9] Moreover, previous studies have reported less than optimal management of severe PPH and failure to fully apply guidelines in approximately 40 percent of all cases.[10] Furthermore, important variations in clinical practice related to PPH occur between and within countries, despite relatively similar national guidelines.[11] This problem demonstrates the gap between the availability of EBPs recommendations and the use of these practices at the point of care delivery.[12] In light of the fact that patients often do not receive the best or even optimal nursing care, there is a considerable reason to examine what is known in the research evidence and what happens in current practice.

Moving evidence into practice is difficult due to a variety of reasons including the complexity of organizations, individual health care practitioners, leadership and changing health care environments.[13] Multiple factors and barriers to guideline implementation continue to exist and use of evidence-based practices recommended by the guidelines is inconsistent and should be studied.[14] The factors potentially influencing the acquisition of evidence into practice are many and varied. Various factors and dynamics within the contemporary health care system serve to impede innovation adoption by actors within the system, particularly nurses.[15] The researcher must consider nurse-midwife as individual characteristic attributes, as well as organizational, EBPs characteristics, and barriers of EBPs.[14] The factors that influence the implementation of evidence-based or innovation diffusion is influenced by individual, innovation-specific, and organizational characteristics, are fundamentally a social and communicative process.[16] Therefore, the conceptual framework for this study was based on Rogers' Diffusion of Innovations Model.[16] The literature concerns the many factors influencing the implementation of research evidence. Consequently, the researcher found it is necessary to use other theoretical perspectives and evidence from empirical studies.

Although little-known factors influencing the implementation of EBPs have been investigated in Thailand, the focus has been general, not specific. Nevertheless, few publications in Thailand have focused on the factors related to implementing the evidence on PPH. Additionally, this research attempted to better understand the reasons behind the ongoing gap between evidence and practices during intrapartum care for the management of PPH in community hospital. Because in Thailand, 87 percent of PPH cases have been found to be referrals from community hospitals due to limitations involving obstetricians, resources and accessibility. Therefore, the purpose of this study was to examine factors predicting the implementation of EBPs for PPH management. The hypothesis of the study was that factors including years of experiences in delivery room, personal innovativeness, perceived barriers to EBPs, perceived characteristics of clinical practice guideline (CPG), organizational climate for EBPs implementation, organization support and hospital size would predict the implementation of EBPs for PPH management among intrapartum nurses.

Methods

This study used a cross-sectional predictive correlational design was carried out at delivery unit in community hospitals governed by Thailand's Ministry of Public Health (MOPH) from March through June 2019. The predictive factors including years of experiences in delivery room, personal innovativeness, perceived barriers to EBPs, perceived characteristics of CPG, organizational climate for EBPs implementation, organization support and hospital size were tested for effects on the implementation of EBPs for PPH management.

Participants and data collection

The sample of the study was 275 intrapartum nurses who were working in the delivery room. Purposive sampling was

used to select the participants according to the following inclusion criteria. They were intrapartum nurses who had been working in the delivery room unit for more than six months, and providing maternal and child healthcare services in their unit. Head nurse of the delivery room unit was also eligible.

A multi-stage random sampling technique was used to recruit the sample. Four of 13 health regions of services of Thailand were chosen by simple random sampling and one province from each region was selected by the same technique. In each selected province, four community hospitals were randomly selected using stratified random sampling using hospital size as stratification and resulting in 16, 15, 9 and 10 small, medium, middle-level, and large community hospitals, respectively. All nurses in these selected hospitals meeting the inclusion criteria were invited to participate the study.

To apply a multivariate analysis, the sample size should be adequate to retain the power for the given number of estimated parameters. With a total of 7 predictors, a sample size of at least 200 participants was suggested by Hair et al.[18] After data collection, 275 respondents completed the questionnaire.

Ethical considerations

The Institutional Review Board of Faculty of Nursing, Burapha University approved this research (IRB approval number: 03-12-2561). Consents and agreements were obtained from ward head nurse and staff nurse, with permission from the research ethics committees of MOPH in four provinces. All participants signed the informed consent form before participation in this study.

Instruments

Data were collected by using six self-reported questionnaires with relevant permissions obtained from the original authors, and were administered in Thai language. Details of the six questionnaires are as follows.

The Evidence-based Practices Implementation Activity for PPH Prevention and Management (EBPIA-PPH)

This instrument, originally developed by the researcher, contains 28 items with two dimensions of major procedure for PPH prevention and management. Each item is scored on four-point Likert-type scales ranging from 1-never practiced to 4-all the time. The higher score indicates a higher use of EBPs recommendations for PPH prevention and management in daily practice. Content validity was high with a content validity index (CVI) of 0.90. Internal consistency reliability was acceptable with a Cronbach's alpha coefficient of 0.854 found in this study.

Individual Innovativeness (II)

Innovativeness was defined as the willingness to change and the degree to which an individual is relatively earlier in adopting new ideas.[16] This tool is the shortened version of the scale containing 10 items with 7-point Likert-type scale ranging from 1-strongly disagree to 7-strongly agree. A higher score reflects a higher level of innovativeness or earliness in adopting new ideas. In this study, internal consistency reliability was acceptable with a Cronbach's alpha coefficient of 0.81.

BARRIERS scale

Perceived barriers to EBPs questionnaire consists of 29 items, grouped into four subscales including professional characteristics, organization characteristics, the characteristics of the innovation and characteristics of the communication.[34] Items are rated on a 4-point Likert-type scale ranging from 1-none to 4-a great extent. A higher score indicates greater perceived barriers to implementation of research. In this study, internal consistency reliability was acceptable with a Cronbach's alpha coefficient of 0.847.

Perceived Characteristics of Guideline (PCG)

PCG consists of 15 items representing Roger's five constructs including relative advantage, compatibility, complexity, trial-ability and observability.[16] Each subscale is measured as a continuous variable using total score from seven-point Likert-type scale ranging from 1-strongly disagree to 7-strongly agree. The higher score indicates greater perceived characteristics of guideline. In this study, internal consistency reliability was high with a Cronbach's alpha coefficient of 0.904.

Organizational Support (OS)

OS contains five items measuring the extent to which nursing staff perceive the organizational support during EBPs implementation.[29] These items are rated by four-point Likert-type scales ranging from 1-strongly disagree to 4-strongly agree. The highest score indicates higher perceived organizational support. In this study, internal consistency

reliability was acceptable with a Cronbach's alpha coefficient of 0.745.

Organizational Climate for EBPs Implementation

Organizational Climate for EBPs Implementation scale contains 18 items measuring the strategic climate for EBPs implementation, which identifies the extent to which an employee' s unit prioritizes and values evidence-based practices. The items are rated on four-point Likert-type scale ranging from 1-slight extent to 4-very great extent. A higher score indicates the nurses' higher perception of the fact that the organization has a strategic supportive climate for EBPs implementation.[29] In this study, internal consistency reliability was high with a Cronbach's alpha coefficient of 0.912.

Data collection procedure

Data were collected from March - June 2019. After the IRB approval, the researchers contacted with the nurse directors in all selected community hospitals to provide information about the objectives of the study. Ward head nurses of the delivery room were contacted to acquire appropriate time for data collection. The researchers selected a nurse at each hospital to be research coordinator to help in the data collection procedure. They were trained to collect data, to check for questionnaire completion, and to mail the completed questionnaires to the researchers.

Data analysis

Descriptive statistics were used to present demographic characteristics as mean with standard deviation and frequency with percentage. Data were tested for normality and assumptions of multiple regression. Pearson's product correlation analysis was performed to examine the relation of implementation of EBPs for PPH management with each individual potential predictive factor. Standard multiple regression analysis was performed to determine factors influencing the implementation of EBPs for PPH management. A statistical significance was set at a type I error of 5% (or *P*-value of < 0.05) for all analyses. Data were analyzed using SPSS version 23 statistical software.

Results

A total of 275 participants completed the questionnaire (Table 1). Their average age was 37.99 years ranging from 23 to 60 years (*SD* = 9.20). They were graduates with Bachelor's degree programs in nursing and Master degree (95.6% and 4.4%, respectively). Years of experience as registered nurse (RN) ranged from 1 to 38 years (15.56 ± 9.41) and as personnel working in delivery room ranged from 1 to 35 years (10.95 ± 7.287). Most of the participants (94.5%) had been trained to implement the prevention and management of PPH for 1 - 2 times (Table 1).

Table 1 Demographic characteristics of participants (N = 275).

Characteristics	*n*	%
Age (years) (37.90 ± 9.209; min = 23, max = 60)		
20 – 30	84	30.55
31 – 40	78	28.36
41 – 50	82	29.82
51 or higher	31	11.27
Highest level of nursing education		
Bachelor's of Science in Nursing	265	96.36
Master of Science in Nursing	10	3.64
Years of experience as a registered nurse (years) (15.57 ± 9.525; min = 1, max = 38)		
1 – 7	63	22.91
8 – 14	67	24.36
15 – 21	54	19.64
22 – 28	62	22.55
29 or higher	29	10.54
Years of experience in delivery room (years) (11.01 ± 7.377; min = 1, max = 35)		
1 – 7	96	34.91
8 – 14	101	36.73
15 – 21	51	18.55
22 – 28	20	7.27
29 or higher	7	2.54
Training in implementing the prevention and management of PPH		
Never	10	3.64
1 – 2 times	188	68.36
> 2 times	77	28.00

Note: PPH = postpartum hemorrhage

In terms of the association between each of the potential predictive factor based on the Pearson's Product Moment correlation coefficient, factors with significantly positive correlation with EBPIA-PPH scores included Organization Climate to EBP Implementation (*r* = 0.384), Organizational Support (*r* = 0.366), years of experience in delivery room (*r* = 0.298), Perceived Characteristics of CPG (*r* = 0.225), large community hospital (*r* = 0.210), and individual innovativeness (*r* = 0.152). On the other hand, Perceived Barriers to EBPs (*r* = -0.273) was negatively correlated with EBPIA-PPH score with statistical significance (Table 2).

Multiple linear regression analysis revealed that six predicting factors together were significantly correlated with implementation of EBPs for management of PPH ($F_{7, 267}$ = 4.915, *P*–value < 0.01). The implementation of EBPs for

Table 2 Pearson's Product Moment correlation coefficients among variables (N = 275).

	EBPIA-PPH	Exp	INNO	PCG	BAR	OS	OC	F1HS
EBPIA-PPH	1.000	0.298**	0.152*	0.225**	-0.273**	0.366**	0.384**	0.210**
Exp		1.000	0.042	0.177	-0.134	0.229	0.148	-0.028
INNO			1.00	0.012	-0.080	0.090	0.058	0.029
PCG				1.000	-0.283	0.411	0.406	0.025
BAR					1.000	-0.348	-0.416	-0.125
OS						1.000	0.575	-0.026
OC							1.000	-0.002
F1HS								1.000

* *P*-value < 0.05; ** *P*-value < 0.01.

Note:

EBPIA-PPH = Evidence-based Practices Implementation Activity for PPH Prevention and Management; Exp = Years of experience; INNO = Individual Innovativeness; PCG = Perceived Characteristics of CPG; OS = Organizatinal Suport;OC = Organization Climate to EBP Implementation; F1HS = large community hospital.

management of PPH was significantly predicted by Organizational Climate for EBPs Implementation (β = 0.261, *P*–value < 0.001), number of year of experience in delivery room (β = 0.222, *P*–value < 0.001), large community hospitals (β = 0.206, *P*–value < 0.001), personal innovativeness (β = 0.166, *P*–value = 0.002), Organizational Support (β = 0.138, *P*–value = 0.039), and Perceived Barrier (β = -0.128, *P*–value = 0.038) (Table 3). These six factors altogether could explain 27.6% of the variance on implementation of EBP for management of PPH (R^2 =0.276) with statistical significance (*P*–value < 0.01). However, Perceived Characteristics of CPG was not a significant predictor (Table 3).

Table 3 Predictors of implementation of EBPs for management of PPH (N = 275).

Predictors	B	SE	β	*t*	*P*-value
Constant	3.360	0.191	-	17.554	< 0.001
Organizational climate (OC)	0.005	0.001	0.261	3.883	< 0.001
Year of experiences (Exp)	0.007	0.002	0.222	4.191	< 0.001
Personal innovativeness (INNO)	0.005	0.001	0.166	3.174	0.002
Perceived characteristic of CPG (PCG)	0.071	0.002	0.002	0.041	0.967
Organizational support (OS)	0.011	0.006	0.138	2.017	0.039
Hospital size (F1HS)	0.109	0.027	0.206	3.979	< 0.001
Perceived barriers (BAR)	-0.024	0.030	-0.128	-0.806	0.038

R = 0.012, R^2 = 0.276, adjusted R^2 = 0.264, SE = 0.193, F change = 4.915, *P*-value < 0.01.

Discussions and Conclusion

The results of study revealed that intrapartum nurses who had a better organizational climate for EBPs implementation, had more working experience in delivery room, worked in large community hospitals, had better personal innovativeness, and better organizational support, were more likely to the concept of implementation of EBPs for management of PPH. However, higher perceived barriers of EBPs was negatively correlated with adoption or implementation of EBP for management of PPH. The findings of this study were consistent with that of previous studies.[14-33]

Based on the previous literature, factors influencing the implementation of evidence-based diffusion were individual, innovation-specific, and organizational characteristics, and is fundamentally a social and communicative process.[16] Many researchers identified factors influencing the adoption of EBPs in nursing practice. Nurses' top reasons for adopting EBP have been identified as having a personal interest in the change in practice, avoiding risk of negative consequences to the patient, and personally valuing the evidence.[17]

Organizational climate had a large influence on implementation of EBPs for management of PPH. It was a factor independently and directly affecting the rate of intra-organizational diffusion of innovation.[30] The previous study also unveiled that the unique contributions of nurse manager EBPs leadership behaviors and nurse manager EBPs competencies in explaining unit climate for EBP implementation from multi-unit cross sectional design found that unit climates for EBP implementation demonstrated the largest effect.[33] Similarly, the study in Thailand found that the significant predictors in multiple regression were research experience, support resources, and research climate, which accounted for 30.40% of variance in research utilization in nursing practice.[33] Organizations where nurses perceived more satisfactory culture, leadership and evaluation were found to be associated with more research utilization than those nurses with lower perceptions of their context.[33]

An individual decision making regarding the adoption of an innovation includes the individual's previous practice, perception of existing needs or problems, innovativeness, and the norms of the individual's social system.[16] This study was consistent with the a study that nurses and midwives with more years of working experience had a significantly greater negative relationship with the practice of EBP.[19] This study was also consistent with a study that Thai nurses who had 11 - 20 years of nursing experience perceived more barriers to finding research and barriers to changing practice than nurses with 1 - 10 and > 20 years of nursing experience, and nurses with nursing experience of more than 20 years perceived more support of using EBPs than other groups.[20] Nurses who had 11 - 20 years of nursing experience had higher reported barriers than those with 1 - 10 years of nursing experience.[20]

Regarding hospital size variable, in this study, large community hospitals were associated with stronger adoption

or implementation of EBP for PPH management. Hospital size was reported as a significant predictor of innovation in the innovation diffusion literature.[32] Hospital size had a positive relationship with opportunities for staff development, staffing and support services, and facilitation.[32] Large, mature, functionally differentiated, specialized organizations are believed to have more capacity to adopt innovations.[14,32] Thai nurses perceived that all the recommendations from the EBPGs for acute pain were very appropriate to use in Thai hospital settings.[20] Nurses at large hospitals had higher percentages of using each of EBPGs.[20]

Personal innovativeness had little effect on EBPs implementation and was positively correlated with adoption or implementation of EBPs in this study. Inherent personality characteristics that influence adoption are related to values, beliefs, and interests of the individual.[25] Personal innovativeness was related to adoption in a number of nursing and critical care studies.[26] Regarding the registered nurses' level of innovativeness or their ability to initiate or adapt to change, another study revealed that nurses were neither unsupportive nor supportive of the adoption of pain management practices and of evidence-based pain assessment practices.[27]

Organizational support had little effect on EBPs implementation in our present study. To promote the adoption of innovative influences, organizational support is important.[28] Failure by organizations to provide and support staff to create unit-specific solutions and evaluate change in practice could create an impediment to implementation.[28] Nurses implemented evidence-based care to a greater extent when they perceived their culture as more supportive and ready for EBP.[28] Similarly, the study of St-Pierre found there was a statistically significant positive relationship in perceived levels of organizational support and nursing staff perceptions of modification to policies and procedures to reflect the new guidelines.[30] In addition, resource and staff development support in the form of continuing education about nursing research was shown to have a positive association with research utilization.[14]

In this present study, perceived barrier of EBP implementation had a slight, negative effect on EBPs implementation. This finding was consistent with the fact that there are many factors identified as barriers to or facilitators of research utilization. One of the biggest barriers to implementing EPBs for Thai nurses is that most research reports or articles are published in English.[20] A study among Thai nurses indicated that since research reports or articles were published in English, 58.4% of the nurses had difficulty to understand and perceived this as a barrier.[23] As a result, Thai nurses participants used standards/protocols and textbooks in Thai language the most due to their availability, accessibility, and trustworthiness.[23] The study of the national survey previously mentioned[23] was consistent with a study reporting that obstacles to implementing the EBPs at a Thai regional hospital included the English language, time constraints, limited experience in some interventions and inadequate support from policymakers.[24]

However, perceived characteristic of CPG was not significantly associated with the implementation of EBPs for PPH in our present study. Even though not statistically significant, a moderate association between this factor and the implementation suggested that behavior change needed to accept the implementation was not large. In addition, moderatge perceived complexity of the CPG implied that the CPG was still inviting which could result in a high acceptance rate.

When an innovation was correlated with the four positive attributes, and at the same time, not correlated with its complexity, the innovation would be more likely and easily to be adopted.[14,21] Our current study found that scores of CPG complexity perceived by the nurse were higher than those of perceived relative advantage and compatibility of the CPG. This was also found in the high score of perceived barriers toward the CPG.

In conclusion, predictors of the implementation of EBPs for PPH management included organizational climate for EBPs implementation, number of years of experience in delivery room, large community hospital, personal innovativeness, organizational support, and perceived barriers. Surprisingly, perceived characteristic of CPG was not a predictor of the implementation. This could be a limitation of this study because the items asked a diverse perception toward characteristic of CPG attributes. Furthermore, certain relatively redundant items were asked which could lead to reluctance for clear and distinct answers. However, our findings could be used to guide the intervention to promote implementing of EBPs. Such interventions should be able to help nurse identify relevant EBP climate embedding mechanisms that can better create climates supportive of EBPs.

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