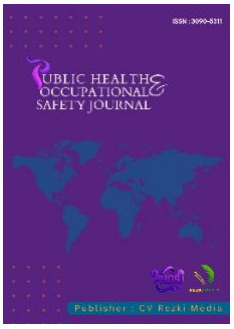

Compliance with family planning and its association with quality of life among Meranaw women in rural Philippines

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ABSTRACT

Background: The COVID-19 pandemic disrupted access to essential health services, including family planning (FP), particularly in rural and underserved communities. These disruptions may influence women's reproductive practices and overall quality of life (QoL).

Objectives: This study aimed to determine the level of family planning compliance and examine its influence on the quality of life among Meranaw women during the COVID-19 pandemic.

Methods: A descriptive cross-sectional design was employed among 378 Meranaw women who were family planning users in selected municipalities of Lanao del Sur, Philippines. Data were collected from January to October 2022. A stratified random sampling technique was used based on municipal distribution to ensure proportional representation of respondents. A validated researcher-developed questionnaire assessed attitude- and practice-related compliance (CVI = 0.81–0.92; α = 0.79), while QoL was measured using the WHOQOL-BREF. Data were analyzed using descriptive statistics and multiple linear regression.

Results: Respondents demonstrated high compliance in both attitude (mean = 3.61) and practice (mean = 3.41) domains. Overall QoL was rated very satisfactory (mean = 5.72), with the highest scores in the psychological (mean = 5.89) and relational (mean = 5.85) domains. Multiple regression analysis revealed that age (β = .319, $p < .001$), monthly income (β = –.097, p = .008), number of children (β = .395, $p < .001$), duration of FP use (β = .092, p = .034), and type of FP method (β = .129, $p < .001$) significantly predicted QoL. The model explained a substantial proportion of variance (R^2 = 0.974), indicating strong predictive capacity.

Conclusions: Meranaw women demonstrated high compliance with family planning practices despite pandemic-related constraints, thereby significantly improving the quality of life. Sustaining family planning services during public health crises is essential to maintaining women's well-being, particularly in rural and culturally distinct populations.

Keywords: compliance, COVID-19, family planning, Meranaw women, quality of life.

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INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has profoundly disrupted healthcare systems worldwide, compelling governments to reallocate resources toward infection control, vaccination programs, and emergency response measures (Arsenault et al., 2022; Bali et al., 2022; Smallwood et al., 2022). While these efforts were necessary, they inadvertently affected the delivery and continuity of essential health services, including family planning (FP). Evidence indicates that the pandemic led to significant reductions in FP utilization, particularly in low-resource and rural settings where healthcare access is already constrained (Banke-Thomas & Yaya, 2021; Karp et al., 2024; Mickler et al., 2021). These disruptions have been associated with increased unmet need for contraception, unintended pregnancies, and adverse maternal and reproductive health outcomes (Geleto et al., 2023; Rezaei et al., 2023).

In the Philippine context, the impact of COVID-19 on reproductive health services has been substantial. Estimates suggest a decline in contraceptive prevalence rates during community quarantine periods, with projections indicating millions of women experiencing disrupted access to FP services and a corresponding rise in unintended pregnancies (Marquez et al., 2020). Although family planning has been recognized as an essential health service during the pandemic (Marzouk et al., 2023; Mendoza & Ombao, 2022), disparities persist, particularly in geographically isolated and disadvantaged areas where access to healthcare facilities and supplies remains limited (Hayudini & Pangandaman, 2024; Karp et al., 2024).

Rural populations are disproportionately affected by structural barriers, such as limited transportation, shortages of healthcare providers, and socioeconomic constraints, which were further exacerbated by pandemic-related restrictions (Coombs et al., 2022; Duminy et al., 2021; Sigdel et al., 2023; Sileo et al., 2023). In such contexts, the continuity of FP services becomes critical, as effective contraceptive use has been shown to improve maternal and child health outcomes, regulate fertility, and enhance overall family well-being (Feriani et al., 2024). More importantly, access to and compliance with FP practices are closely linked to women's quality of life (QoL), encompassing physical, psychological, social, and economic dimensions (Hazel et al., 2024; Miskeen et al., 2025; Skevington et al., 2024).

Despite these established relationships, a critical gap remains in the literature regarding the role of behavioral compliance with family planning—particularly in terms of attitudes and practices—in shaping women's quality of life. Existing studies have predominantly focused on service utilization, access barriers, and contraceptive prevalence, with limited attention to how sustained compliance behaviors influence broader well-being outcomes. Furthermore, there is a scarcity of empirical evidence examining these relationships within culturally distinct and underserved populations, particularly in the context of public health crises such as the COVID-19 pandemic. This gap is particularly evident among culturally distinct populations, such as the Meranaw community in Lanao del Sur, where reproductive health behaviors are shaped by deeply rooted cultural norms, religious beliefs, and gender roles (Pangandaman et al., 2025; Sadang et al., 2021).

Meranaw women, as part of a predominantly Muslim population in Southern Philippines, are often influenced by sociocultural expectations that may either facilitate or hinder the adoption of modern contraceptive methods (Pangandaman et al., 2025; Salve et al., 2023). These influences are further complicated during public

health emergencies, where mobility restrictions and limited healthcare access intersect with cultural and religious considerations. Understanding how these factors interact to affect FP compliance and, consequently, quality of life is essential for developing context-specific interventions that are both culturally sensitive and effective.

This study offers several important contributions to the existing body of knowledge. First, it shifts the focus from mere access and utilization of family planning services to behavioral compliance, emphasizing how attitudes and practices directly influence quality-of-life outcomes. Second, it provides empirical evidence from a culturally distinct Muslim population, addressing the underrepresentation of indigenous and minority groups in reproductive health research. Third, by situating the analysis within the context of the COVID-19 pandemic, the study contributes to understanding how health behaviors are sustained under conditions of systemic disruption. Finally, integrating socio-demographic and behavioral variables into a predictive model offers a comprehensive, context-sensitive framework for examining determinants of women's well-being in rural, resource-constrained settings.

This study is anchored in the Health Belief Model (HBM), which posits that individuals' health behaviors are influenced by their perceptions of susceptibility, severity, benefits, and barriers, as well as cues to action and self-efficacy. In the context of family planning, women's decisions to comply with contraceptive practices may be shaped by their beliefs about its benefits for health and family well-being, as well as perceived cultural or religious constraints. By applying this framework, the present study examines the extent of family planning compliance and its influence on the quality of life of Meranaw women during the COVID-19 pandemic, while also considering the role of socio-demographic factors as potential predictors of quality-of-life outcomes.

METHODS

Study Design and Participants

This study employed a cross-sectional analytical design to examine the extent of family planning (FP) compliance and its influence on quality of life (QoL) among Meranaw women during the COVID-19 pandemic. In this study, quality of life (QoL) was treated as the dependent variable, measured across psychological, socioeconomic, relational, and health/functioning domains. The independent variables included socio-demographic characteristics (age, occupation, educational attainment, income, age at marriage, length of marriage, and number of children) and family planning-related variables (reason for FP use, type of FP method, duration of FP use, and source of information). Additionally, compliance with family planning, both attitude- and practice-related, was examined as a key behavioral predictor.

A probability sampling technique using stratified random sampling was applied across 16 municipalities in District 1 of Lanao del Sur, Philippines (Buadipuso Buntong, Bubong, Ditsaan-Ramain, Kapai, Lumba Bayabao, Maguing, Marantao, Masiu, Mulondo, Piagapo, Poona Bayabao, Saguiaran, Tagoloan, Tamparan, Taraka, & Wao). The total population (N = 23,103) was used to determine the sample size using the Raosoft sample size calculator, yielding a required sample of 378 respondents. Eligible participants included legally married Meranaw women who were current users of family planning methods. Respondents from each

municipality were proportionally and randomly selected and participated from January to October 2022.

Ethical approval statement

Data collection was conducted with strict adherence to COVID-19 health protocols. Ethical clearance (CHS-0321-2022) was obtained from the College of Health Sciences Ethics Committee of Mindanao State University–Marawi. Informed consent was secured from all participants prior to data collection.

Research Instruments

The study instrument consisted of three parts. The first part collected respondents' socio-demographic data. The second part assessed attitude- and practice-related compliance with family planning using a researcher-developed questionnaire. The attitude component consisted of 14 items, while the practice component included 8 items, both measured using a 4-point Likert scale ranging from 1 (strongly disagree/low compliance) to 4 (strongly agree/high compliance). Higher scores indicated greater levels of compliance. The third part measured quality of life (QoL) using an adapted version of the WHOQOL-BREF, which includes domains on psychological well-being, socioeconomic conditions, relational aspects, and health/functioning. Responses were rated on a 5-point Likert scale, with higher scores indicating better perceived quality of life. The researcher-developed instruments underwent content validation by five experts in community and public health, each with over ten years of experience in family planning programs. The computed Content Validity Index (I-CVI = 0.92; S-CVI = 0.81) indicated excellent content validity. Reliability testing yielded a Cronbach's alpha coefficient of 0.79, indicating acceptable internal consistency (Bonnet, 2024; Pangandaman, 2018).

Data Analysis

Data were analyzed using IBM SPSS Statistics version 27. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize respondents' characteristics, compliance levels, and quality of life. To examine the influence of selected variables on QoL, a multiple linear regression analysis was performed, with QoL as the dependent variable and socio-demographic and family planning-related variables as independent predictors. Statistical significance was set at $p < 0.05$.

RESULTS

The socio-demographic profile (Table 1) indicates that family planning users were predominantly within the reproductive age group (26–49 years), suggesting that FP services are being accessed primarily by women in their peak fertility period. The high proportion of respondents engaged in informal economic activities or unemployment, combined with low monthly income levels, reflects the socio-economic constraints characteristic of rural settings. The predominance of birth spacing as the primary reason for FP use suggests a preference for managing family size rather than limiting it, which may reflect cultural and religious influences. Additionally, reliance on health facilities and workers as the primary source of information underscores the critical role of primary healthcare systems in promoting FP utilization in geographically isolated areas.

Table 1. Profile of Meranaw Women as FP Users

Age	*Freq.*	%	**Reasons for using FP**	*Freq.*	%
18-25 years old	16	4.2	Birth limiting	32	8.5
26-49 years old	362	95.8	Birth spacing	248	65.6
Occupation			Both (Spacing & limiting)	81	21.4
Private Sector Employee	9	2.4	Health concern	17	4.5
Government Employee	32	8.5	**Methods of FP being practiced**		
Self-Employed (Business)	171	45.2	Condom	41	10.8
Unemployed	166	43.9	Pills	86	22.8
Educational Attainment			Injectables	85	22.5
Elementary level	18	4.8	Implant/SDI	67	17.7
Graduated Elementary	24	6.3	Lactating Amenorrhea Method (LAM)	53	14.0
High School level	39	10.3	Vasectomy	0	0.0
Graduated from High School	185	48.9	Bilateral Tubal Ligation (BTL)	0	0.0
College Level	27	7.1	Intra Uterine Device (IUD)	0	0.0
Graduated College	85	22.5	Standard Days Method	32	8.5
Monthly Family Income			Others	14	3.7
1,000 – 5,000 Php	201	53.2	**Duration of Using FP**		
5,001 – 10,000 Php	87	23.0	Less than 1 year	38	10.1
10,001 – 15,000 Php	45	11.9	1 year	95	25.1
15,001 – 20,000 Php	37	9.8	2 years	88	23.3
20,001 – 25,000 Php	8	2.1	3 years	107	28.3
25,001 Php & above	0	0.0	More than 3 years	50	13.2
Age got married			**Source of Information about FP**		
Less than 20 years old	84	22.2	Health facility/health worker	353	93.4
21-29 years old	205	54.2	Mass media	4	1.1
30 years and above	89	23.5	Friends & Neighbours'	19	5.0
Total:	378	100%	Total:	378	100%

The high level of attitude-related compliance indicates that respondents generally hold favorable perceptions of family planning, particularly regarding its benefits for maternal recovery, birth spacing, and family well-being (Table 2). Notably, strong agreement on partner communication suggests that interpersonal dynamics play a crucial role in shaping compliance behaviors. In contrast, practice-related compliance, while generally high, revealed variability across indicators. High compliance in clinic visits and contraceptive use reflects effective access and utilization of services (Table 3). However, lower compliance in method switching and use of multiple contraceptive options suggests limited flexibility or possible constraints in method availability, awareness, or cultural acceptability. This pattern indicates that while basic adherence is achieved, more complex or adaptive FP behaviors remain less practiced.

The very satisfactory quality of life reported across all domains suggests that respondents perceive their overall well-being positively despite the challenges posed by the pandemic (Table 4). Higher scores in the psychological and relational domains indicate strong emotional resilience and supportive social relationships, which may buffer the adverse effects of socio-economic constraints. Meanwhile, comparatively lower scores in health and functioning may reflect underlying limitations in access to healthcare services or physical well-being, particularly during pandemic-related disruptions.

Table 2. Meranaw Women's Attitude-Related Compliance to FP

Statement Items	Mean	SD	Interpretation
1. The ideal age of having a first child is 20-30.	3.71	0.456	Strongly Agree
2. The ideal number of children should be between 3-5.	2.96	0.705	Agree
3. Good communication between couples positively influences contraceptive use.	4.00	0.000	Strongly Agree
4. Husband's positive views on Family Planning services play an important role in	4.00	0.000	Strongly Agree
5. Contraceptive use benefits both husband and wife.	3.85	0.361	Strongly Agree
6. Contraception use limits the number of children.	4.00	0.000	Strongly Agree
7. Contraceptive use increases the time interval between childbirths.	4.00	0.000	Strongly Agree
8. Birth spacing allows the mother to recover physically & emotionally before she gets pregnant again.	3.71	0.452	Strongly Agree
9. The contraceptive method I am using is adequate.	3.70	0.458	Strongly Agree
10. Contraceptive methods can help protect the health of the family and the community.	3.71	0.455	Strongly Agree
11. Contraceptives provide a sense of safety to the husband, wife, and child.	3.67	0.469	Strongly Agree
12. Religious and cultural beliefs hinder couples from using Family planning methods.	2.95	0.851	Agree
13. The coronavirus (COVID-19) pandemic and the social restrictions affect my ability to avoid or delay pregnancy.	3.35	0.477	Strongly Agree
14. Contraceptives have no significant effects.	2.98	0.592	Agree
Weighted Mean	**3.613**		Strongly Agree

Table 3. Meranaw Women's Practice-Related Compliance to FP

Statement Items	Mean	SD	Interpretation
1. I visit a clinic/ health facility for Family Planning service.	4.70	0.702	Highly compliant
2. I use contraceptives to prevent unplanned pregnancy.	4.94	0.311	Highly compliant
3. I had an unplanned pregnancy due to a lack of contraceptive use.	2.33	0.946	Low compliant
4. I use different types of available contraceptives in my area.	2.18	0.910	Low compliant
5. My current method of contraceptive changes from time to time.	1.94	0.480	Low compliant
6. Do you discuss issues of contraception with your partner?	3.73	0.812	Very compliant
7. Is contraception easily available and accessible to you despite the pandemic?	4.65	0.531	Highly compliant
8. Are you worried about the side effects of contraception?	2.78	0.629	Compliant
Weighted Mean	**3.406**		Compliant

Table 4. Meranaw Women's Quality of Life Amid the COVID-19 Pandemic

Dimensions of Quality of Life (QoL)	Mean	SD	Interpretation
Psychological QoL	5.89	0.331	Very Satisfied
Socioeconomic QoL	5.70	0.601	Very Satisfied
Relational/Spouse-Partner QoL	5.85	0.468	Very Satisfied
Relational/Family-Friends QoL	5.84	0.464	Very Satisfied
Health & Functioning QoL	5.32	0.378	Very Satisfied
Weighted Mean	**5.72**		Very Satisfied

The regression model demonstrated a high explanatory power ($R^2 = 0.974$) (Table 5), indicating that the included variables collectively account for a substantial

proportion of the variance in quality of life. However, such a high R^2 value may also suggest potential multicollinearity among predictor variables. To address this, multicollinearity diagnostics were conducted using the Variance Inflation Factor (VIF) and tolerance values. The results indicated that all VIF values were within acceptable limits (VIF < 10) and tolerance values exceeded 0.10, suggesting that multicollinearity was not a significant concern and that the regression estimates are stable and reliable. The regression analysis indicates that both socio-demographic and family planning-related variables significantly influence quality of life. Notably, age and length of marriage emerged as strong predictors, suggesting that life stage and relationship stability contribute to improved well-being. The positive influence of the number of children and duration of FP use may reflect adaptation to reproductive roles and increased familiarity with FP practices over time. Conversely, the negative association with income, although statistically significant, may indicate underlying socio-economic disparities or reporting inconsistencies that warrant further investigation. The significance of information sources highlights the importance of health communication and access to reliable guidance in shaping health outcomes.

Table 5. Multiple Linear Regression Analysis Predicting Quality of Life

Predictor Variables	B	SE (B)	β	Sig.
Age	18.434	0.775	0.319	<0.001*
Occupation	1.136	0.234	0.115	<0.001*
Educational Attainment	-0.351	0.394	-0.040	0.374
Monthly Family Income	-1.026	0.387	-0.097	0.008*
Age at Marriage	0.639	0.544	0.037	0.241
Length of Marriage	8.254	0.448	0.395	<0.001*
Number of Children	0.626	0.238	0.095	0.009*
Reason for Using FP	3.075	0.456	0.174	<0.001*
Type of FP Method	-0.444	0.339	-0.070	0.190
Duration of FP Use	0.887	0.418	0.092	0.034*
Source of Information	4.549	0.618	0.129	<0.001*

Model Summary: $R^2 = 0.974$; $F = 1121.387$; $p < 0.001$ *Significant at $p < 0.05$

DISCUSSION

This study examined the extent of family planning (FP) compliance and its influence on the quality of life (QoL) among Meranaw women during the COVID-19 pandemic. The findings reveal that respondents demonstrated high levels of compliance in both attitude and practice domains, alongside a very satisfactory quality of life across psychological, relational, socioeconomic, and health dimensions. Furthermore, multiple regression analysis identified several significant predictors of QoL, including age, income, number of children, duration of FP use, and sources of information, indicating that both socio-demographic and behavioral factors contribute to women's overall well-being.

The high level of compliance observed in this study contrasts with prior research reporting disruptions in access to and utilization of FP services during the COVID-19 pandemic (Kuandyk et al., 2024; VanBenschoten et al., 2022). While many studies emphasized declining contraceptive use due to mobility restrictions and health system strain, the present findings suggest that continuity of care in rural health units may mitigate these adverse effects. This aligns with studies highlighting the importance of maintaining essential health services during public health emergencies (Khoshmaram et al., 2025; Kleine-Bingham et al., 2023).

Moreover, the association between FP compliance and improved quality of life supports existing literature demonstrating that contraceptive use contributes to better health, economic stability, and psychosocial well-being (Finlay et al., 2025; Gaffield & Kiarie, 2022). However, this study extends previous findings by emphasizing that behavioral compliance, rather than mere access or utilization, plays a critical role in influencing QoL outcomes.

The findings can be explained using the Health Belief Model (HBM), which posits that perceived benefits, barriers, and self-efficacy influence health behaviors. In this study, respondents strongly agreed on the benefits of family planning, including birth spacing, maternal recovery, and family well-being. These positive perceptions likely enhanced compliance despite pandemic-related barriers.

Additionally, partner communication emerged as a key factor, indicating that interpersonal relationships significantly influence reproductive health decisions. Supportive spousal dynamics may reinforce positive health behaviors, thereby contributing to improved psychological and relational quality of life.

The influence of socio-demographic factors further reflects life-course and contextual mechanisms. For instance, older age and longer marital duration may be associated with greater stability, experience, and adaptation to reproductive roles. Similarly, prolonged exposure to FP practices may increase familiarity and confidence, reinforcing sustained compliance.

Although educational attainment was not a statistically significant predictor in the regression model, it remains an important contextual factor. Women with higher levels of education may possess better health literacy, enabling informed decision-making regarding contraceptive use and reproductive health (Idris et al., 2023; Panayi et al., 2024).

Cultural and religious influences within the Meranaw community play a complex role in shaping FP behaviors. While certain beliefs may discourage the use of modern contraceptive methods, others promote responsible parenthood and family well-being. This dual influence highlights the importance of culturally sensitive health interventions that align medical recommendations with community values.

Access to healthcare emerged as a critical enabling factor, as evidenced by the high reliance on health facilities and healthcare workers as primary sources of information. In rural settings such as Lanao del Sur, the availability of accessible and trusted healthcare services likely contributed to sustained compliance and positive quality-of-life outcomes, even during the pandemic.

The findings have important implications for healthcare practice and policy. First, strengthening primary healthcare systems is essential to ensure continuous access to family planning services, particularly in geographically isolated and disadvantaged areas. Second, health education programs should emphasize not only access but also sustained behavioral compliance, incorporating strategies that promote positive attitudes and partner involvement.

From a policy perspective, integrating family planning services into emergency preparedness frameworks is crucial to maintaining reproductive health services during crises. Additionally, culturally tailored interventions that respect religious and social norms can enhance the acceptance and effectiveness of FP programs in Muslim and indigenous communities.

Limitations of the study

Despite its contributions, this study has several limitations. The cross-sectional design limits the ability to establish causal relationships between family planning compliance and quality of life. The focus on Meranaw women in rural Lanao del Sur may also limit the generalizability of findings to other populations. Furthermore, the use of self-reported data may introduce response bias. Future studies may benefit from longitudinal and mixed-methods approaches to capture better the dynamic and contextual nature of reproductive health behaviors.

CONCLUSIONS

This study demonstrates that high levels of family planning compliance are associated with improved quality of life among Meranaw women, even amid the disruptions of the COVID-19 pandemic. Both socio-demographic factors and behavioral aspects of family planning—particularly attitudes, practices, and access to reliable information—were found to influence women's well-being significantly. The findings highlight the critical role of sustained access to family planning services and the importance of culturally responsive health interventions in rural and Muslim communities. By emphasizing behavioral compliance rather than mere service utilization, this study contributes a more nuanced understanding of how reproductive health practices shape quality of life in resource-constrained settings. Strengthening primary healthcare systems and integrating family planning into emergency preparedness strategies are essential to safeguarding women's health and well-being during public health crises.

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DATA AVAILABILITY

The data supporting the results of this study were gathered through field-based observations and have been recorded by the researcher. Although the dataset is not openly accessible, it can be shared by the corresponding author upon reasonable and well-justified request.

AI DISCLOSURE STATEMENT

During the preparation of this manuscript, the authors used DeepL Translate in combination with Google Translate and Grammarly to support translation, grammar checking, and language refinement. All generated outputs were carefully reviewed and edited by the authors to ensure accuracy, clarity, and adherence to academic standards. The authors take full responsibility for the content of this manuscript.

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CONFLICT OF INTEREST

The authors hereby declares that this research is free from conflicts of interest with any party.

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REFERENCES

Ali, S. M. H. O., Bangcola, A. A., & Lawi, A. J. D. (2022). Exploring the issues, practices, and prospects of family planning among married couples in Southern Philippines. *Belitung Nursing Journal,* *8*(1), 35-43. https://doi.org/10.33546/bnj.1939

Alsulaiman, S. A., & Rentner, T. L. (2021). The Use of the Health Belief Model to Assess U.S. College Students' Perceptions of Covid-19 and Adherence to Preventive Measures. *Journal of Public Health Research,* *10*(4), 1-8. https://doi.org/10.4081/jphr.2021.2273

Arsenault, C., Gage, A., Kim, M. K., Kapoor, N. R., Akweongo, P., Amponsah, F., Aryal, A., Asai, D., Awoonor-Williams, J. K., Ayele, W., Bedregal, P., Doubova, S. V., Dulal, M., Gadeka, D. D., Gordon-Strachan, G., Mariam, D. H., Hensman, D., Joseph, J. P., Kaewkamjornchai, P., . . . Kruk, M. E. (2022). COVID-19 and resilience of healthcare systems in ten countries. *Nature Medicine, 28*(6), 1314-1324. https://doi.org/10.1038/s41591-022-01750-1

Bali, A. S., He, A. J., & Ramesh, M. (2022). Health policy and COVID-19: path dependency and trajectory. *Policy and Society,* *41*(1), 83-95. https://doi.org/10.1093/polsoc/puab014

Banke-Thomas, A., & Yaya, S. (2021). Looking ahead in the COVID-19 pandemic: emerging lessons learned for sexual and reproductive health services in low- and middle-income countries. *Reproductive Health,* *18*(1), 248. https://doi.org/10.1186/s12978-021-01307-4

Bonnet, J. P. (2024). Content and Face Validation of the Lifestyle Medicine Assessment. *American Journal of Lifestyle Medicine,* *18*(2), 252-259. https://doi.org/10.1177/15598276231214712

Coombs, N. C., Campbell, D. G., & Caringi, J. (2022). A qualitative study of rural healthcare providers' views of social, cultural, and programmatic barriers to healthcare access. *BMC Health Services Research,* *22*(1), 438. https://doi.org/10.1186/s12913-022-07829-2

Diamond-Smith, N. G., Gopalakrishnan, L., Wawire, S., Kunesh, J., Choi, J., Ali, M., & El Ayadi, A. M. (2025). Does family planning use empower women? A systematic review of the evidence. *Reproductive Health,* *22*(1), 230. https://doi.org/10.1186/s12978-025-02146-3

Duminy, J., Cleland, J., Harpham, T., Montgomery, M. R., Parnell, S., & Speizer, I. S. (2021). Urban family planning in low-and middle-income countries: a critical scoping review. *Frontiers in Global Women's Health, 2*, 749636. https://doi.org/10.3389/fgwh.2021.749636

Feriani, P., Yunitasari, E., Efendi, F., Krisnana, I., Ernawati, R., Tianingrum, N. A., & Safaah, N. (2024). A Systematic Review of Determinants Influencing Family Planning and Contraceptive Use. *Iranian Journal of Nursing and Midwifery Research, 29*(5), 596-607. https://doi.org/10.4103/ijnmr.ijnmr_321_23

Finlay, J. E., Gulaid, M., Mibenge, C., Madise, N., Dodoo, N. D., Stover, J., Weinberger, M., O'Brien, M., & Zimmermann, M. (2025). Contraception to women's economic empowerment: A narrative review. *World Development, 196*, 107167. https://doi.org/10.1016/j.worlddev.2025.107167

Gaffield, M. E., & Kiarie, J. (2022). Setting global standards: The paramount importance of considering contraceptive values and preferences of clients and providers. *Contraception, 111*, 1-2. https://doi.org/10.1016/j.contraception.2018.08.006

Geleto, A., Taylor, J., & Beyene, T. (2023). Interruptions in contraception and unintended pregnancy during the COVID-19 pandemic: A protocol for systematic review and meta-analysis. *Women's Health, 19*, 17455057221147382. https://doi.org/10.1177/17455057221147382

Hayudini, R. I., & Pangandaman, H. K. (2024). Factors and Preferences in Modes of Delivery among Pregnant Tausug Women in Jolo, Sulu [Original Research]. *Avicenna Journal of Nursing and Midwifery Care, 32*(2), 98-106. https://doi.org/10.32592/ajnmc.32.2.98

Hazel, E. A., Jiwani, S. S., Maïga, A., Mady, G. R. M., Wilson, E., Mwinnyaa, G., & Amouzou, A. (2024). Quality adjusted coverage of family planning services in low-and middle-income countries: Analysis of 33 countries using Demographic and Health Survey data. *Journal of global health, 14*, 04125. https://doi.org/10.7189/jogh.14.04125

Idris, I. B., Hamis, A. A., Bukhori, A. B. M., Hoong, D. C. C., Yusop, H., Shaharuddin, M. A.-A., Fauzi, N. A. F. A., & Kandayah, T. (2023). Women's autonomy in healthcare decision making: a systematic review. *BMC Women's Health, 23*(1), 643. https://doi.org/10.1186/s12905-023-02792-4

Karl, J. A., Fischer, R., Druică, E., Musso, F., & Stan, A. (2022). Testing the Effectiveness of the Health Belief Model in Predicting Preventive Behavior During the COVID-19 Pandemic: The Case of Romania and Italy [Original Research]. *Frontiers in Psychology, 12*, 627575. https://doi.org/10.3389/fpsyg.2021.627575

Karp, C., Williams, K., Wood, S. N., Olaolorun, F. M., Akilimali, P., Guiella, G., Gichangi, P., Mosso, R., Makumbi, F., Anglewicz, P. A., & Moreau, C. (2024). Family planning service disruptions in the first two years of the COVID-19 pandemic: Evidence from health facilities in seven low- and middle-income countries. *PLOS Global Public Health, 4*(1), e0002435. https://doi.org/10.1371/journal.pgph.0002435

Khoshmaram, N., Gholipour, K., Farahbakhsh, M., & Tabrizi, J. S. (2025). Strategies and challenges for maintaining the continuity of essential health services during a pandemic: a scoping review. *BMC Health Services Research, 25*(1), 691. https://doi.org/10.1186/s12913-025-12812-8

Kleine-Bingham, M. B., Rangel, G., Sarakbi, D., Kelleher, T., Mensah Abrampah, N. A., Neilson, M., Bodson, O., White, P., Bothra, V., M de Carvalho, H., da C A Pinto, F., & Babar Syed, S. (2023). Country learning on maintaining quality essential health services during COVID-19 in Timor-Leste: a qualitative analysis. BMJ Open, 13(4), e071879. https://doi.org/10.1136/bmjopen-2023-071879

Kriel, Y., Milford, C., Cordero, J. P., Suleman, F., Steyn, P. S., & Smit, J. A. (2023). Access to public sector family planning services and modern contraceptive methods in South Africa: A qualitative evaluation from community and health care provider perspectives. *PloS One, 18*(3), e0282996. https://doi.org/10.1371/journal.pone.0282996

Kuandyk, A., Ortega, M. A., Ntegwa, M. J., & Sarria-Santamera, A. (2024). Impact of the COVID-19 pandemic on access to and delivery of maternal and child healthcare services in low-and middle-income countries: a systematic review of the literature. *Frontiers in Public Health, 12*, 1346268. https://doi.org/10.3389/fpubh.2024.1346268

Marquez, M. P, N., Laguna, E, P., Kabamalan, M. M, M., Cruz, & G, T. (2020). Estimating the Potential Impact of the COVID-19 Pandemic on Key Sexual and Reproductive Health Outcomes in the Philippines. https://www.uppi.upd.edu.ph/sites/default/files/pdf/UPPI-Impact-of-COVID-19-on-SRH.pdf

Marzouk, M., Lam, S. T., Durrance-Bagale, A., Nagashima-Hayashi, M., Neo, P., Ung, M., Zaseela, A., Aribou, Z. M., Agarwal, S., & Howard, N. (2023). Effects of COVID-19 on sexual and reproductive health services access in the Asia-Pacific region: a qualitative study of expert and policymaker perspectives. *Sexual and Reproductive Health Matters, 31*(1), 2247237. https://doi.org/10.1080/26410397.2023.2247237

Mendoza, O. & Ombao, R. (2022). Evidence for action: Assessing the availability of essential family planning services during COVID-19 in the Philippines. https://www.rti.org/insights/family-planning-services-philippines-covid-19

Mickler, A. K., Carrasco, M. A., Raney, L., Sharma, V., May, A. V., & Greaney, J. (2021). Applications of the High Impact Practices in Family Planning during COVID-19. *Sexual and Reproductive Health Matters, 29*(1), 9-17. https://doi.org/10.1080/26410397.2021.1881210

Miskeen, E., Korkoman, S., Alhassoun, N. K., Aljuhani, R. F., Alqahtani, R. A. H., Alwabari, S. S., Alamri, M. S., Alshahrani, A. M., Alhalafi, A. H., Almalki, S., Al Fifi, J., Elnour, S., Almuqrin, F. F., Al Ali, Y. A., Karkaman, M. j., & Al-Shahrani, A. M. (2025). Factors influencing family planning decisions in Saudi Arabia. *BMC Women's Health, 25*(1), 222. https://doi.org/10.1186/s12905-025-03737-9

Panayi, M., Charalambous, G. K., & Jelastopulu, E. (2024). Enhancing quality of life and medication adherence for people living with HIV: the impact of an information system. *Journal of Patient-Reported Outcomes, 8*(1), 10. https://doi.org/10.1186/s41687-023-00680-x

Pangandaman, H. (2018). Content Validity of Technology Informatics Guiding Education Reform (TIGER) Assessment Instrument for Informatics Competencies of Graduating Nursing Student. *International Journal of Advanced Research, 6*(11), 682-688. https://doi.org/10.21474/ijar01/8047

Pangandaman, H. (2023). Challenges Faced by Digital Immigrant Nurse Educators in Adopting Flexible Learning Options During the COVID-19 Pandemic: A Phenomenological Study. *Journal of Client-Centered Nursing Care, 9*(4), 309-316. https://doi.org/10.32598/jccnc.9.4.571.2

Pangandaman, H. K., Mai-Alauya, S. A., Macarambon, R. d. R., Macalaba, S. P., Ali, N. A., Mukattil, N. P., Hayudini, M. A. A., Sadjail, A. H., Abdurasul, J. N. A., & Adjilani-Misah, Z. M. (2025). Bridging Tradition and Modern Medicine: Health Beliefs and Practices of Meranaw Faith Healers Toward

Vaccination Against Preventable Communicable Diseases. *Frontiers in Health Informatics, 14*(2), 36-43.

Rezaei, F., Amiri-Farahani, L., Haghani, S., Pezaro, S., & Behmanesh, F. (2023). The impact of the COVID-19 pandemic on contraceptive methods, abortion, and unintended pregnancy: a cross-sectional study. *BMC Women's Health, 23*(1), 357. https://doi.org/10.1186/s12905-023-02512-y

Sadang, J. M., Macaronsing, S. I. P., Alawi, N. M., Taib, N. M., & Pangandaman, H. K. (2021). Hypertension self-care management during covid-19 pandemic crisis in the meranao tribe: A phenomenological inquiry. *Jurnal Keperawatan Indonesia, 24(*2), 74-81. https://doi.org/10.7454/jki.v24i2.1308

Salve, M. M., Tan, N. F. A., Iskandal, I. I., Hayudini, R. I., & Pangandaman, H. K. (2023). Perception on the Use of Artificial Contraception Among Mothers in Jolo, Sulu: A Basis for Policy Implementation. *Journal of Namibian Studies, 33*, 1722-1730.

Sigdel, A., Bista, A., Sapkota, H., & Teijlingen, E. v. (2023). Barriers in accessing family planning services in Nepal during the COVID-19 pandemic: A qualitative study. PloS One, 18(5), e0285248. https://doi.org/10.1371/journal.pone.0285248

Sileo, K. M., Muhumuza, C., Helal, T., Olfers, A., Lule, H., Sekamatte, S., Kershaw, T. S., Wanyenze, R. K., & Kiene, S. M. (2023). Exploring the effects of COVID-19 on family planning: results from a qualitative study in rural Uganda following COVID-19 lockdown. *Reproductive Health, 20*(1), 31. https://doi.org/10.1186/s12978-023-01566-3

Skevington, S. M., Schick-Makaroff, K., Rowland, C., Molzahn, A., & and the, W. G. (2024). Women's environmental quality of life is key to their overall quality of life and health: Global evidence from the WHOQOL-100. *PloS One, 19*(10), e0310445. https://doi.org/10.1371/journal.pone.0310445

Smallwood, N., Harrex, W., Rees, M., Willis, K., & Bennett, C. M. (2022). COVID-19 infection and the broader impacts of the pandemic on healthcare workers. *Respirology, 27*(6), 411-426. https://doi.org/10.1111/resp.14208

VanBenschoten, H., Kuganantham, H., Larsson, E. C., Endler, M., Thorson, A., Gemzell-Danielsson, K., Hanson, C., Ganatra, B., Ali, M., & Cleeve, A. (2022). Impact of the COVID-19 pandemic on access to and utilisation of services for sexual and reproductive health: a scoping review. *BMJ Global Health, 7*(10), e009594. https://doi.org/10.1136/bmjgh-2022-009594