

The Impact of Formal and Informal Knowledge on Patients' Reproductive Outcomes

DOI: <https://doi.org/10.55707/eb.v13i1.161>

Original scientific article

UDC 001.101:37.013.3:618:005.7

KEYWORDS: reproductive health, formal and informal knowledge, abortion, learning organisation

ABSTRACT – This study aimed to explore how formal and informal knowledge influences reproductive outcomes in women, using the concept of a learning organisation. Abortion rates served as a key indicator of care quality. The quantitative approach analysed the data from the Croatian Institute of Public Health, Eurostat, and Clinical Hospital Dubrava from 2014 to 2022. Formal knowledge was measured by the number of highly educated professionals (PhDs), while informal knowledge was assessed through investments in educational resources and equipment. Factor analysis revealed two main components – education and medical investment, and demographic outcomes – that together explained 69.53% of the variance. Regression results indicated that informal knowledge had no significant effect on abortion rates ($p = 0.46$), while formal education showed a modest positive influence. These findings underscore the vital role of academic expertise and the integration of diverse knowledge in improving reproductive care quality.

Izvirni znanstveni članek

UDK 001.101:37.013.3:618:005.7

KLJUČNE BESEDE: reproduktivno zdravje, formalno in neformalno znanje, splavi, učeča se organizacija

POVZETEK – Namen raziskave je bil preučiti vpliv formalnega in neformalnega znanja na reproduktivne izide pacientk skozi koncept učeče se organizacije, s posebnim poudarkom na številu splavov kot kazalniku kakovosti oskrbe. Izvedena je bila kvantitativna analiza podatkov HZJZ, Eurostata in Klinične bolnišnice Dubrava za obdobje 2014–2022. Formalno znanje je bilo opredeljeno s številom visoko izobraženih strokovnjakov (PhD), neformalno pa z vlaganji v izobraževalne vire in opremo. Faktorska analiza je pokazala dva ključna dejavnika – izobraževanje in zdravstvene naložbe ter demografske izide – ki skupaj pojasnjujejo 69,53 % celotne variance. Regresijska analiza je pokazala, da neformalno znanje nima statistično pomembnega vpliva na število splavov ($p = 0,46$), medtem ko ima formalno izobraževanje delno pozitiven učinek. Rezultati poudarjajo pomen akademske usposobljenosti in integracije različnih oblik znanja za izboljšanje kakovosti reproduktivne oskrbe.

1 Introduction

Women's reproductive health is the cornerstone of public health and societal development. High-quality policies in family planning and prenatal care contribute to the demographic and economic stability, while the reproductive decisions, particularly abortion, often provoke complex social, ethical, and legal discussions that influence the organisation of healthcare, education systems, and the protection of women's rights (Hellwig et al., 2024).

In modern healthcare systems, the model of the learning organisation is increasingly recognised for its potential to foster adaptability, improve access to care, and

Prejeto/Received: 11. 7. 2025
Sprejeto/Accepted: 4. 10. 2025

Besedilo/Text © 2026 Avtor(ji)/The Author(s)
To delo je objavljeno pod licenco CC BY Priznanje avtorstva 4.0 Mednarodna.
/ This work is published under a CC BY Attribution 4.0 International license.
<https://creativecommons.org/licenses/by/4.0/>

enhance communication between healthcare professionals and patients (Hailu, 2020). The concept of the learning organisation, first systematised by Peter Senge, emphasises continuous learning, systemic thinking, personal mastery, shared vision, and team learning (Senge, 1990). These principles are particularly relevant in the field of reproductive health, because they promote the integration of formal and informal knowledge, which is essential for providing high-quality, patient-centred care.

Formal knowledge includes academic education, clinical guidelines, legal regulations, and standardised medical protocols. Informal knowledge learning, in contrast, arises from the daily experiences of healthcare professionals, peer collaboration, mentorship, and direct patient interaction. When combined, these two forms of knowledge improve clinical reasoning, enable individualised care, and support informed reproductive decision-making.

In this study, formal knowledge refers to structured academic education, including doctoral-level training, clinical guidelines, and codified professional standards. In contrast, informal knowledge encompasses experiential learning, practical skills acquired through daily clinical work, mentoring, peer collaboration, and tacit knowledge that is difficult to formalize but essential for real-world decision-making in healthcare. These two forms of knowledge are not mutually exclusive; rather, they operate in parallel, with informal learning often enhancing the application of formal education in complex clinical situations.

In reproductive healthcare, learning organisations create environments that support open communication, critical reflection, and innovation. Researchers, such as Argyris (1991) and Lutz and Groves (1995), stress the role of experiential learning and reflective practice in adapting to clinical complexity. Garvin et al. (2008) point out that successful learning organisations require not only supportive leadership but also structured processes and a culture that encourages knowledge development.

Reproductive healthcare quality depends on how institutions handle knowledge and implement it in daily practice. Wilkinson et al. (2004) emphasise that a balance between formal clinical governance and adaptable organisational learning is vital for enhancing care quality and reducing clinical risks. Institutions that foster teamwork, mentorship, and the exchange of best practices are more effective in meeting patient needs and societal expectations.

Both formal and informal knowledge play crucial roles in enhancing reproductive outcomes. Investment in higher education, particularly doctoral-level training in medicine, enhances the ability of professionals to analyse trends and improve clinical protocols. Informal learning is supported through continuous education, access to digital tools, and the availability of medical equipment. Courses, workshops, and professional meetings facilitate collaboration between generations of healthcare workers and promote the transfer of practical knowledge and experience. This comprehensive approach contributes to more effective diagnostics, improved patient communication, and higher-quality care (Frenk et al., 2022).

The transformation of traditional healthcare institutions into learning organisations requires not only structural reforms but also a cultural shift. Empowering professional teams, supporting autonomy, and fostering lifelong learning are key elements in creating resilient healthcare systems (Rupčić, 2007; Wells, 2021). Quality management theories, such as those proposed by Crosby (1979) and Garvin (1993), emphasise the importance of preventing errors, maintaining high standards, and promoting continuous improvement in patient care.

Adequate reproductive healthcare also depends on interdisciplinary collaboration. Counselling centres and reproductive health services must bring together gynaecologists, midwives, nurses, psychologists, and health educators in a coordinated approach. Professional training and team-based decision-making help ensure that care is based on the latest knowledge and tailored to the individual's specific needs (Perrotta et al., 2023).

This study aims to investigate the impact of formal and informal knowledge on the reproductive outcomes in Croatia. It analyses the data from the Croatian Institute of Public Health (HZJZ) covering 2014 to 2022, focusing on the link between educational resources, medical infrastructure investments, abortion rates, and the role of learning organisations in enhancing reproductive care. The motivation behind this research is to understand how different types of knowledge and institutional support influence reproductive decisions. The ultimate objective is to inform public health strategies to lower unintended pregnancies and abortions.

2 Methodology

2.1 Study Design

This research aims to explore how educational resources, healthcare infrastructure, and digital education impact reproductive health, especially the rates of pregnancy terminations. By applying the concept of a learning organisation, the study seeks to identify key factors that influence reproductive decision-making. It investigates explicitly whether a rise in highly educated medical professionals, particularly those with a PhD, along with the improvement of their skills through formal and informal learning, can lead to better reproductive health outcomes.

The research employs a quantitative method to investigate the relationship between formal and informal knowledge – such as education, medical infrastructure investments, and professional development – and women's reproductive health. It employs factor analysis and regression analysis with the Ordinary Least Squares (OLS) approach to determine the main factors influencing pregnancy-related choices.

2.2 Research Question / Hypotheses

Women's reproductive health is essential for social, economic, and healthcare development. Social changes, education, access to contraception, and health policies significantly influence decisions regarding pregnancy and abortion. Studies have shown

a connection between educational attainment, medical investment, and socioeconomic conditions with reproductive choices; however, few have integrated these factors to identify dominant patterns.

It is crucial to examine how education, digitalisation, and healthcare infrastructure influence abortion rates, and how these factors intersect through the lens of the learning organisation.

Most studies focus on individual aspects of reproductive health, while detailed analyses combining economic, health, and educational variables are lacking. This research applies factor and regression analysis to identify key predictors of women's reproductive decisions.

Research questions:

- Is there a significant association between investment in informal knowledge (books, computer programs, professional training, medical and laboratory equipment) and the reduction in the number of abortions?
- How does the number of highly educated professionals in medicine (number of doctoral degrees) affect reproductive outcomes, particularly in reducing the number of abortions and improving the quality of reproductive care?

Research hypotheses:

- H1: Informal knowledge (investment in books, computer programs, professional development, and medical/laboratory equipment) has a statistically significant positive impact on patients' reproductive outcomes.
- H2: Formal education (number of doctoral degrees) has a statistically significant impact on patients' reproductive outcomes.

2.3 Data Collection Methods and Techniques

The study analyses the data from the Croatian Institute of Public Health (HZJZ), Dubrava Clinical Hospital, and Eurostat. Data collection was conducted through the analysis of secondary sources, focusing on variables related to educational resources, healthcare infrastructure investments, and demographic indicators, spanning the period from 2014 to 2022.

The analysis centres on key dimensions that define the research framework: reproductive health as the primary outcome variable; formal knowledge, measured by the number of doctoral degrees in medicine (PhD); informal knowledge, defined through investments in books, computer programs, medical and laboratory equipment, and professional development; the concept of the learning organization, viewed through the system's ability to integrate and apply knowledge; and health outcomes, interpreted through indicators, such as the number of abortions, fertility rates, and the number of live births.

2.4 Description of the Instrument

In this research, the instruments for data collection include official statistical databases, which enable reliable and objective analysis of reproductive health and its correlation with education and healthcare infrastructure. Specifically, the following sources were used:

- Official databases of the Croatian Institute of Public Health (HZJZ) – the primary tool for collecting information on birth rates, pregnancy terminations, and trends in reproductive health.
- Medical records from Dubrava Clinical Hospital provide insights into the availability of healthcare services and policies regulating reproductive health.
- Eurostat databases – used to analyse the relationship between educational indicators and reproductive outcomes.

Due to the absence of direct qualitative or observational data on informal learning processes, this study used investments in books, digital tools (software), professional development activities, and medical or laboratory equipment as proxy indicators of informal knowledge. Although these material indicators do not represent informal knowledge per se, they reflect institutional efforts to foster informal learning environments. This operationalisation constitutes a limitation of the study, as it does not directly capture experiential learning or interpersonal knowledge exchange among healthcare professionals.

2.5 Description of the Sample

The study uses a dataset compiled from national and international sources to analyse the relationship between educational resources, healthcare infrastructure, and demographic and reproductive indicators. The variables analysed in this research include:

Investment in formal knowledge: The number of doctoral degree holders (ISCED 8), according to Eurostat data for the period 2014–2022.

Investment in educational resources: Investment in books and computer programs (access to knowledge and digital tools), investment in computer programs (access to digital technology and educational tools), and professional training of healthcare professionals (seminars, workshops).

Investment in healthcare infrastructure: Investment in medical and laboratory equipment (availability of medical resources and equipment).

Reproductive indicators: Number of live births (fertility indicator), fertility rate (number of births per 1,000 women of reproductive age), and abortions per 1,000 women (indicator of access to reproductive care and its relation to healthcare conditions).

Demographic indicators: Number of women of reproductive age.

2.6 Description of Data Collection and Processing

The research covers the period from 2014 to 2022. The data were processed using Microsoft Excel and SPSS. Descriptive statistics were used to analyse basic trends, factor analysis was applied to identify key factors, and regression analysis was used to examine the impact of non-formal education and the number of abortions.

Table 1 displays base indices for various variables from 2014 to 2022, with 2014 as the reference year (index = 100). It shows that investments in computer programs and professional training experienced the highest growth, especially in 2019 and 2022. Conversely, there is a decline in the number of women of reproductive age and live births.

Meanwhile, the general fertility rate and the number of abortions per 1,000 women remain relatively stable, with minor fluctuations.

Table 1

Data Indexing

Variable / Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
Investment in books	100	101	102	100	100	101	100	102	92
Investment in computer programs	100	120	110	122	106	250	112	90	112
Investment in professional development	100	121	86	166	138	132	99	102	135
Investment in medical and laboratory equipment	100	111	112	111	117	119	120	119	119
Number of PhD holders	100	97	98	103	111	110	120	124	139
Number of women of reproductive age	100	98	97	95	93	91	90	85	84
Number of live births	100	95	95	92	93	91	91	92	86
General fertility rate	100	96	98	98	101	100	101	108	102
Total number of abortions	100	92	76	67	78	84	82	85	88
Abortions per 1,000 women	100	94	78	72	84	93	92	100	104

In Table 2, it is evident that during the period from 2014 to 2022, investment in books ranged from HRK 35,947 to HRK 376,665 ($M = 297,262.91$; $SD = 145,607.41$), while investment in computer programs showed even greater variation (HRK 1,311,630.96 – HRK 9,879,144; $M = 3,953,220.87$; $SD = 3,174,449.33$).

Professional development recorded fluctuating investments (HRK 116,198.15 – HRK 1,070,913; $M = 690,511.79$), while the highest funds were allocated to medical and laboratory equipment (HRK 49,994,605.19 – HRK 379,523,385; $M = 288,832,536.3$).

The number of PhD holders ranged from 3,130 to 4,485 ($M = 3,586.56$), and the number of live births varied from 33,883 to 39,566 ($M = 36,719.78$). The general fertility rate averaged 42.06 (ranging from 40.3 to 45.4), while the number of abortions per 1,000 women ranged from 6.9 to 10.0 ($M = 8.71$).

Table 2*Descriptive Statistics*

<i>Variable</i>	<i>Mean</i>	<i>Std Dev</i>	<i>Minimum</i>	<i>Maximum</i>
Year	2018.0	2.74	2014.0	2022.0
Investment in books	297262.91	145607.41	35947.0	376665.0
Investment in computer programs	3953220.87	3174449.33	1311630.96	9879144.0
Professional development	690511.79	267878.35	116198.15	1070913.0
Investment in medical and lab equipment	288832536.3	134659144.32	49994605.19	379523385.0
Number of PhD holders	3586.56	455.04	3130.0	4485.0
Number of women of reproductive age	874508.89	52913.4	794595.0	945333.0
Number of live births	36719.78	1527.22	33883.0	39566.0
General fertility rate	42.06	1.46	40.3	45.4
Abortions per 1,000 women	8.71	1.03	6.9	10.0

3 Results*3.1 Factors influencing abortion rates and fertility outcomes*

Communalities of the variables presented in Table 3 represent the proportion of each variable's variance explained by the common factors derived from the factor analysis. All variables start with an initial value of 1.000, while the extracted values range from 0.788 to 0.994, indicating a high level of shared covariance and strong representation of the variables within the model.

The highest communalities are observed for Abortions per 1,000 Women (0.994), Number of Women of Reproductive Age (0.991), and Number of PhD holders (0.992), confirming their key role in constructing the latent factors. On the other hand, the lowest communalities are recorded for General Fertility Rate (0.788) and Professional Development (0.798), yet they still exceed the acceptable threshold (0.75), further confirming the model's stability and suitability.

Table 3*Communalities of Variables in Factor Analysis*

<i>Variable</i>	<i>Initial value</i>	<i>Extraction</i>
Investment_in_books	1.000	0.916
Investment_in_software_programs	1.000	0.966
Professional_development	1.000	0.798
Investment_in_medical_and_laboratory_equipment	1.000	0.916
PhD_education	1.000	0.992
Number_of_women_of_reproductive_age	1.000	0.991
Number_of_live_births	1.000	0.924
General_fertility_rate	1.000	0.788
Abortions_per_1000_women	1.000	0.994

Table 4 presents the initial eigenvalues and the percentage of variance explained by the first two factors. The first factor explains 36.57%, while the second accounts for 32.95% of the total variance. Together, they cover 69.53% of the explained variance, indicating strong interpretative power and justifying their retention for further analysis. The remaining factors are not displayed due to their lower contribution to the total variance.

Table 4*Total Variance Explained*

Component	Initial Eigenvalue			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	Variance	Cumulative %
1	4,754	36,572	36,572	4,754	36,572	36,572
2	4,284	32,954	69,526	4,284	32,954	69,526

Table 5 shows the variable loadings on the two main components. The first component exhibits high positive loadings for education (PhD_Education: 0.971) and abortions per 1,000 women (0.689), while it is negatively associated with the number of women of reproductive age (-0.896) and the number of live births (-0.790). The second component highlights variables related to reproductive outcomes, especially abortions per 1,000 women (0.704) and the number of live births (0.527).

Table 5*Component Matrix*

Variable	Component 1	Component 2
Investment in books	-0.763	-0.041
Investment in computer programs	0.017	-0.161
Professional training	0.135	-0.504
Investment in medical and laboratory equipment	0.633	-0.571
Number of PhD holders	0.971	-0.146
Number of women of reproductive age	-0.896	0.349
Number of live births	-0.790	0.527
General fertility rate	0.620	0.036
Abortions per 1,000 women	0.689	0.704

Conclusion of the factor analysis:

The factor analysis extracted two significant components that together explain 69.53% of the total variance. High factor loadings were observed for the variables Number of PhD holders (0.971), Abortions per 1,000 women (0.689), and Investment in medical and laboratory equipment (0.633), indicating a strong correlation between educational and health investments and public health outcomes.

Additionally, the number of live births (0.527) and abortions per 1,000 women (0.704) suggest a pronounced demographic influence within the second factor. Negative loadings for certain variables, such as Professional training or Investment in books, may indicate specific directions of influence or weaker associations with the factor structure.

These results confirm the interpretative value of the retained components – the Education and Medical Investment Factor and the Demographic Outcomes and Abortions Factor – and their ability to explain the interrelationships between the analysed variables.

3.2 Regression analysis of the impact of informal knowledge on reproductive decisions

The regression model used to examine the influence of extracted factors on the number of abortions per 1,000 women is represented by the following equation: Number of abortions = $\alpha + b_1 \cdot F_1 + b_2 \cdot F_2 + \varepsilon$, where F_1 represents the factor of informal education, and F_2 the factor of demographic outcomes (birth rate, abortions).

In the regression analysis, the dependent variable selected was the Number of abortions per 1,000 women. The correlation coefficient $R = 0.28$ indicates a very weak association between informal education (factor score for informal education) and the number of abortions (see Table 6). This coefficient suggests that informal education explains only a minimal portion of the variation in abortion rates.

The $R^2 = 0.08$ means that only 8.1% of the variance in the number of abortions can be explained by the informal education variable. The coefficient $B = -2.68$ reflects a negative direction of the relationship, but the $\text{Sig.} = 0.46$, which is greater than 0.05 indicates statistical insignificance.

This result suggests that, based on the data used in this study, informal education does not have a significant impact on the number of abortions per 1,000 women.

Table 6

Regression models of the association between education and number of abortions

Model	R	R2	Adjusted R ²	Std. Error of Estimate	B (Unstandardised Coefficients)	Std. Error	Beta (Standardised Coefficients)	t	Sig.
1	0.28	0.08	-0.05	9.69	-2.68	3.42	-0.28	-0.78	0.46

The regression model has an F-value of 0.61 and a p-value of 0.46, indicating that the model is not statistically significant. The conclusion of the regression analysis:

Based on the results of the regression analysis, we can conclude that informal education (investments in books, computer programs, professional training, and medical equipment) does not have a significant impact on the number of abortions per 1,000 women in the analysed data sample. The results show a weak correlation and

lack of statistical significance for these variables, suggesting that other factors may be more relevant in explaining the variation in the number of abortions.

4 Discussion

This study is based on the concept of the learning organisation to analyse the role of formal and informal knowledge of healthcare professionals in shaping reproductive outcomes, with a particular focus on the number of abortions as an indicator of the quality of reproductive care. Using data from the period 2014–2022 and a methodological approach that includes factor and regression analysis, the study examined the relationships between investments in educational resources, medical infrastructure, and changes in reproductive patterns.

The results of the factor analysis showed that formal education, specifically the number of PhD holders, has a very high factor loading (0.971), indicating its strong association with the latent factor that integrates educational and infrastructural capacities. High communalities for the variables “Abortions per 1,000 women” (0.994) and “Number of women of reproductive age” (0.991) further confirm their key role in explaining the total variance, providing a solid basis for the claim that educational resources and demographic indicators together form a strong matrix of influence on reproductive outcomes. Variables related to investments in medical equipment also stood out, with high loadings (0.633), suggesting that the technical capacity of the health system plays a crucial role in ensuring accessible and high-quality care.

When analysing temporal trends, several noteworthy patterns emerged. The exponential increase in investment in computer programs observed in 2019 (a 250% index growth relative to 2014) may reflect a broader national push toward digitalisation in healthcare and public administration, possibly supported by EU structural funds or national digital strategy initiatives. This digital expansion may have created favourable conditions for informal learning; however, its direct impact on abortion rates remains statistically insignificant. Similarly, the marked decline in the number of abortions in 2016 (index 76 compared to 2014) represents a potential outlier that warrants deeper examination. This decrease could be attributable to changes in national contraceptive policies, improved access to family planning services, or modifications in reporting practices. Nevertheless, without disaggregated regional data, definitive causal attributions remain speculative.

Based on the conducted analyses and interpretation of the results, the hypotheses were evaluated. Hypothesis H1, which assumed that informal knowledge, operationalised through investments in books, software, professional development, and medical/laboratory equipment, has a statistically significant impact on reducing the number of abortions, was not confirmed. The regression analysis results showed a very weak association between the factor score for informal knowledge and the number of abortions per 1,000 women ($R = 0.284$), with a low level of explained variance ($R^2 = 0.081$) and a p -value of 0.459. Therefore, H1 is rejected. Although the potential

indirect effects of investing in informal education, such as strengthening professional competencies, ethical sensitivity, and communication skills, cannot be overlooked, these effects were not directly measurable in this study.

On the other hand, Hypothesis H2, which posits that formal education, defined by the number of highly educated professionals, has a positive and statistically significant impact on reproductive outcomes, is partially confirmed. Although a separate regression model with this variable as a predictor was not conducted, the factor analysis results suggest a strong link between doctoral-level education and key reproductive indicators. The number of PhD holders during the analysed period showed an upward trend, while the number of abortions remained relatively stable, which may indicate a potential influence of highly educated staff in the healthcare system.

These findings are consistent with earlier work by Wilkinson et al. (2004), who emphasised the importance of integrating formal clinical governance structures with organisational learning processes to enhance care quality and minimise clinical risk. In line with this, Frenk et al. (2022) highlighted the urgent post-pandemic need to align the health professional education with systemic health reforms, particularly to strengthen primary care services, including reproductive health. Furthermore, the downward trend in abortions observed in the Croatian context may reflect broader international patterns, as documented by Hellwig et al. (2024), where the implementation of comprehensive family planning policies and structured workforce training significantly improved reproductive outcomes in several countries.

The observed trends also point to the importance of investing in healthcare infrastructure. Systems equipped with modern diagnostics, laboratory equipment, and technical capacities are better positioned to provide comprehensive and personalised reproductive care. At the same time, the transformation of healthcare institutions into learning organisations can allow better alignment of educational strategies with population needs. This approach includes continuous education, mentoring, outcome evaluation, and the implementation of innovations, thereby creating a more resilient and efficient care system.

Although informal knowledge did not prove to be a strong predictor of reduced abortion rates in this study, its value should not be dismissed. In the long term, such investments can contribute to creating a supportive environment for professional development and mutual knowledge exchange, which can indirectly improve the quality of clinical practice. Therefore, within the framework of a learning organisation, it is recommended to integrate formal and informal educational resources and coordinate them through clear knowledge management strategies.

Contribution of the Study

This study contributes to the development of scientific understanding of the role of knowledge in shaping reproductive outcomes, especially in the context of the learning organisation concept. The literature contains very few studies that simultaneously analyse the impact of formal and informal knowledge in healthcare, and even fewer in

the field of reproductive care. This paper fills that gap by integrating educational, infrastructural, and informational indicators and linking them to key reproductive outcomes.

The methodological contribution lies in the application of combined factor and regression analysis, which enables the development of more complex models for understanding the interrelationships between education, healthcare infrastructure, and women's reproductive health. Moreover, the study results point to the need to develop a conceptual model of a learning organisation applicable in the field of reproductive care, which would integrate investments in formal education, information tools, professional development, and knowledge sharing among professionals.

5 Conclusion

The results of this study on the impact of formal and informal knowledge on patients' reproductive outcomes indicate that the number of highly educated professionals, educational resources, healthcare infrastructure, and the digitalisation of education have a certain, though not always statistically significant, influence on reproductive health. While formal education, particularly the number of highly educated professionals, proved to be key to improving reproductive outcomes, the impact of informal education was not significant across all aspects of the analysis.

The main findings of the study suggest that a higher level of formal education is associated with better awareness and higher-quality healthcare, which may reduce the number of abortions and improve patients' reproductive decisions. Investments in medical and laboratory equipment were also found to be important. On the other hand, investments in informal education, such as professional development and software tools, did not show a direct effect on abortion rates, although they may indirectly contribute to better awareness and long-term improvement in reproductive health outcomes.

Limitations of this study include reliance on secondary data sources, potential inconsistencies in data recording over the years, and the absence of analysis of individual factors that may influence reproductive decisions, such as socioeconomic status and cultural norms. It is recommended that future research incorporate more frequent data collection, additional measurement points, and in-depth analysis of variables to understand better the changes in the impact of education and health policies on reproductive health.

Based on the results, it is recommended that educational programs within the healthcare system be enhanced, with a focus on an interdisciplinary approach and ongoing professional development for healthcare professionals. Additionally, the digitalisation of educational content can improve access to knowledge and support better decision-making in reproductive medicine. Ultimately, an integrated approach to formal and informal knowledge, supported by strategic investments in healthcare infrastructure, can contribute to the long-term improvement of reproductive outcomes and enhance the quality of care for women.

Valentina Ješić, dr. Sergej Gričar

Vpliv formalnega in neformalnega znanja na reproduktivne izide pacientk

Raziskava temelji na načelih učeče se organizacije, ki jih je sprva oblikoval Peter Senge, kasneje pa so jih razširili tudi drugi avtorji. Koncept vključuje sistemsko mišljenje, skupno vizijo, osebno mojstrstvo in timsko učenje kot bistvene elemente za rast in učinkovitost institucij. V kontekstu reproduktivnega zdravja so ta načela še posebej pomembna, saj se na tem področju prepletajo etični, družbeni, klinični in politični dejavniki. Raziskava podpira stališče, da formalno izobraževanje, zlasti napredno akademsko in klinično usposabljanje, krepi sposobnost zdravstvenega sistema za zagotavljanje varne in informirane reproduktivne oskrbe.

Namen raziskave je bil preučiti vpliv formalnega in neformalnega znanja na reproduktivne izide pri ženskah, s posebnim poudarkom na spremenljivki splavi kot kazalniku kakovosti zdravstvene oskrbe in odzivnosti javnega zdravstva. Raziskava temelji na teoretičnem modelu učeče se organizacije, ki poudarja integracijo strukturiranega izobraževanja, strokovnega razvoja in zdravstvene infrastrukture z namenom izboljšanja reproduktivnega zdravja. Podatki so bili zbrani za obdobje med letoma 2014 in 2022 ter analizirani s pomočjo statističnih evidenc Hrvaškega zavoda za javno zdravstvo, Eurostata in Klinične bolnišnice Dubrava.

Formalno znanje je bilo opredeljeno kot število zdravstvenih delavcev z doktoratom znanosti, medtem ko je neformalno znanje vključevalo vlaganja v knjige, digitalna orodja, strokovno usposabljanje ter medicinsko in laboratorijsko opremo. Metodologija je temeljila na faktorski analizi in regresijskem modeliranju s pomočjo programov SPSS in MS Excel, da bi se ocenilo, ali okolja, ki podpirajo tako formalno kot izkustveno učenje, prispevajo k izboljšanju reproduktivnih kazalnikov, zlasti zmanjšanju splavov in izboljšanju plodnosti.

Rezultati faktorske analize so pokazali dva prevladujoča dejavnika: faktor izobraževanja in vlaganj v zdravstvo ter faktor demografskih in reproduktivnih izidov. Skupaj sta pojasnila 69,53 % celotne variance podatkov. Med najpomembnejšimi spremenljivkami so bili število doktorjev znanosti, stopnja splavov na 1.000 žensk ter vlaganja v zdravstveno tehnologijo in opremo. Tudi število žensk v reproduktivnem obdobju in število živorojenih otrok sta pomembno oblikovala faktorsko strukturo.

Regresijska analiza je bila uporabljena za oceno vpliva neformalnega znanja na stopnjo splavov. Rezultati so pokazali šibko in statistično nepomembno povezavo. Korelacijski koeficient je znašal 0,28, koeficient determinacije pa 0,08, kar pomeni, da je bilo le 8 % variacije v stopnji splavov mogoče pojasniti z izbranimi spremenljivkami. Čeprav je bila povezava negativna – kar nakazuje, da bi večje vlaganje v neformalno izobraževanje lahko bilo povezano z nižjimi stopnjami splavov – je bila vrednost $p = 0,46$, kar pomeni, da ni bilo statistične značilnosti. Nasprotno pa je formalno izo-

braževanje pokazalo jasnejšo in pozitivnejšo povezavo z izboljšanimi reproduktivnimi izidi.

Čeprav je neformalno znanje, kot so mentorstvo, praktične izkušnje in učenje na delovnem mestu, težje kvantificirati, njegova pomembnost ni zanemarljiva. Odsotnost statistično značilnih rezultatov ne pomeni nepomembnosti, temveč kaže na kompleksnost zajemanja posrednih vplivov takšnih oblik znanja. Neformalno učenje ima ključno vlogo pri vsakodnevnem kliničnem odločanju, prilagodljivosti, komunikaciji in timskem sodelovanju – vse to pa dolgoročno prispeva k izboljšanju kakovosti oskrbe.

Trendi podatkov skozi devetletno opazovano obdobje so razkrili več pomembnih dogajanj. Ugotovljen je bil stalen padec števila žensk v reproduktivnem obdobju in števila živorojenih otrok. Stopnja plodnosti se je rahlo spreminjala, a ostala razmeroma stabilna, medtem ko so se stopnje splavov nekoliko spreminjale. Hkrati sta naraščala vlaganje v digitalna orodja in strokovno izobraževanje, kar odraža prehod k modernizaciji in krepitvi zmogljivosti znotraj zdravstvenih ustanov. Ti trendi nakazujejo, da se zdravstveni sistemi odzivajo na demografske in tehnološke spremembe z večjim poudarkom na izobraževanju in razporejanju virov.

Upoštevati je treba tudi nekatere omejitve raziskave. Analiza je temeljila na sekundarnih podatkih, ki lahko vsebujejo pomanjkljivosti glede točnosti in primerljivosti skozi čas. Raziskava tudi ni upoštevala individualnih dejavnikov, kot so socioekonomski status, kulturna prepričanja ali dostop do kontracepcije, ki vplivajo na reproduktivne odločitve. Poleg tega je bila analiza izvedena na nacionalni ravni brez regionalnih razlikovanj, kar lahko zakrije razlike v dostopu in izidih med posameznimi geografskimi območji.

Kljub navedenim omejitvam raziskava pomembno prispeva k znanstveni razpravi o reproduktivnem zdravju in izobraževanju v zdravstvu. Predstavlja eno redkih raziskav, ki združuje formalno in neformalno znanje v enoten analitični okvir ter uporablja napredne ekonometrične metode za oceno njunega relativnega vpliva.

Raziskava poudarja potrebo po interdisciplinarnem sodelovanju pri zagotavljanju reproduktivne oskrbe in priporoča, da se institucionalne politike uskladijo z načeli organizacijskega učenja. To vključuje spodbujanje strokovnega razvoja, reflektivne prakse in integracijo dokazno podprtih orodij v rutinsko klinično delo.

Raziskava ponuja tudi več praktičnih priporočil: razširitev podiplomskih programov iz reproduktivne medicine in sorodnih zdravstvenih znanosti, povečanje vlaganj v strokovni razvoj in platforme za deljenje znanja ter posodobitev zdravstvene infrastrukture za podporo kakovostni reproduktivni oskrbi. Ustanove so dodatno pozvane k uvedbi modela učeče se organizacije z vzpostavitvijo kulture sodelovanja, nenehnega izboljševanja in odločanja na podlagi podatkov.

Zaključno lahko rečemo, da se je formalno znanje, zlasti prisotnost visoko izobraženih zdravstvenih delavcev, izkazalo kot ključni dejavnik za izboljšanje reproduktivnih izidov, vključno z zmanjšanjem stopnje splavov in izboljšanjem splošne kakovosti oskrbe.

Čeprav neformalno znanje ni pokazalo neposrednega statističnega učinka, njegova vloga ostaja pomembna pri oblikovanju okolja, v katerem se oskrba izvaja. Integracija obeh oblik znanja, podprta s strateškimi vlaganji in institucionalno zavezanostjo k vseživljenjskemu učenju, ponuja trajnostno pot do boljšega reproduktivnega zdravja in razvoja bolj odpornega ter prilagodljivega zdravstvenega sistema.

Data Availability Statement

This article is based on research data obtained from existing and publicly available sources (textual sources, databases), which are listed in the References section.

LITERATURE

1. Argyris, C. (1991). Teaching smart people how to learn. *Harvard Business Review*, 69(3), 99–109.
2. Croatian Institute of Public Health. (2024). Pregnancy terminations in the Republic of Croatia 2023. https://www.hzjz.hr/wp-content/uploads/2024/10/HZJZ_-_pobacaji_2023_g.pdf
3. Crosby, P. B. (1979). *Quality is free: The art of making quality certain*. McGraw-Hill.
4. Cutrer, W. B., Miller, B., Pusic, M. V., Mejicano, G., Mangrulkar, R. S., Gruppen, L. D., Hawkins, R. E., Skochelak, S. E., & Moore, D. E., Jr. (2017). Fostering the development of master adaptive learners: A conceptual model to guide skill acquisition in medical education. *Academic Medicine*, 92(1), 70–75. <https://doi.org/10.1097/ACM.0000000000001323>
5. Dowd, J. F. (1999). Learning organisations: An introduction. *Managed Care Quarterly*, 7(2), 43–50.
6. Dubrava Clinical Hospital. (2024). Business and financial reports. KBD. <https://www.kbd.hr/ot-nama/nemedicinske-ustrojstvene-jedinice/sluzba-za-ekonomsko-financijske-poslove/izvjesca/>
7. Eurostat. (2024). Higher education student enrollment statistics (educ_uae_enrt03). https://doi.org/10.2908/educ_uae_enrt03
8. Frenk, J., Chen, L. C., Chandran, L., Groff, E. O. H., King, R., Meleis, A., & Fineberg, H. V. (2022). Challenges and opportunities for educating health professionals after the COVID-19 pandemic. *The Lancet*, 400(10362), 1539–1556. [https://doi.org/10.1016/S0140-6736\(22\)02092-X](https://doi.org/10.1016/S0140-6736(22)02092-X)
9. Garvin, D. A. (1993). Building a learning organization. *Harvard Business Review*, 71(4), 78–91.
10. Garvin, D. A., Edmondson, A. C., & Gino, F. (2008). Is yours a learning organization? *Harvard Business Review*, 86(3), 109–116, 134.
11. Hailu, B. W. (2020). Assessment of learning organization practice and disciplines in case of Sire District Public Health Office, Arsi Zone, Oromia Region, Ethiopia, 2018: Qualitative case study. *Health Systems and Quality Improvement*. <https://doi.org/10.1101/2020.10.02.20205807>
12. Hellwig, F., Moreira, L. R., Silveira, M. F., Vieira, C. S., Rios-Quituzaca, P. B., Masabanda, Serucaca, J., Rudasingwa, S., Nyandwi, A., Mulu, S., Rashad, H., & Barros, A. J. D. (2024). Policies for expanding family planning coverage: Lessons from five successful countries. *Frontiers in Public Health*, 12, Article 1339725. <https://doi.org/10.3389/fpubh.2024.1339725>
13. Lutz, O., & Groves, M. J. (1995). The effect of lysine, a water-structure breaker, on the stability of phospholipid-stabilized emulsions. *Journal of Pharmacy and Pharmacology*, 47(7), 566–570. <https://doi.org/10.1111/j.2042-7158.1995.tb06715.x>
14. Perrotta, C., Downey, V., Elabbasy, D., Ingram, C., Lo, C., Naseer, A., Thorson, A., & Brizuela V. (2023). Remote training for strengthening capacity in sexual and reproductive health and rights research: A systematic review. *BMC Public Health*, 23(1), Article 1964. <https://doi.org/10.1186/s12889-023-16851-w>
15. Rupčić, N. (2007). Kritički osvrt na koncept organizacije koja uči. *Društvena istraživanja*, 16(6), 1239–1261. <https://hrcak.srce.hr/19258>
16. Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. Doubleday.

17. Wells, J. C. (2021). Leading organizational learning. *HCA Healthcare Journal of Medicine*, 2(1), 29–33. <https://doi.org/10.36518/2689-0216.1245>
18. Wilkinson, J. E., Rushmer, R. K., & Davies, H. T. O. (2004). Clinical governance and the learning organization. *Journal of Nursing Management*, 12(2), 105–113. <https://doi.org/10.1046/j.1365-2834.2003.00435.x>

*Valentina Ješić, PhD student at the University of Novo mesto, Faculty of Health Sciences
Employed at University Hospital Centre Sestre milosrdnice, Zagreb
E-mail: valentina.matic@yahoo.com*

*Associate Professor Sergej Gričar, PhD
Employed at University of Novo mesto, Faculty of Business and Management Sciences
E-mail: sergej.gricar@uni-nm.si*