Effect of online educational intervention on pregnant adolescents' quality of life

Efeito de intervenção educativa *online* na qualidade de vida de gestantes adolescentes

Efecto de intervención educativa *online* en la calidad de vida de embarazadas adolescentes

Roberta Fortes Santiago[1] https://orcid.org/0000-0002-3642-9648
Inez Sampaio Nery[2] https://orcid.org/0000-0002-7481-2250
Elaine Maria Leite Rangel Andrade[2] https://orcid.org/0000-0002-1772-7439
Isabel Amélia Costa Mendes[3] https://orcid.org/0000-0002-0704-4319
Márcia Teles de Oliveira Nogueira[2] https://orcid.org/0000-0002-2401-4947
Silvana Santiago da Rocha[2] https://orcid.org/0000-0002-1325-9631
Telma Maria Evangelista de Araújo[2] https://orcid.org/0000-0001-5628-9577

How to cite:
Santiago RF, Nery IS, Andrade EM, Mendes IA, Nogueira MT, Rocha SS, et al. Effect of online educational intervention on pregnant adolescents' quality of life. Acta Paul Enferm. 2022;35:eAPE00366.

DOI
http://dx.doi.org/10.37689/acta-ape/2022AO003666

Keywords
Pregnancy in adolescence; Quality of life; Educational technology; Education, distance

Descritores
Gravidez na adolescência; Qualidade de vida; Tecnologia educacional; Educação à distancia

Descriptores
Embarazo en adolescência; Calidad de vida; Tecnología educacional; Educación a distancia

Submitted
February 6, 2021

Accepted
December 7, 2021

Corresponding author
Roberta Fortes Santiago
Rua Olavo Bilac, 2235 – Centro (Sul), CEP: 64001-280; Teresina, PI, Brazil.
E-mail: betafortes@yahoo.com.br

Associate Editor (Peer review process):
Adriana Amorim Francisco
(https://orcid.org/0000-0003-4402-6774)
Escola Paulista de Enfermagem, Universidade Federal de São Paulo, SP, Brazil

Abstract

Objective: To assess the effect of online educational intervention on pregnant adolescents' quality of life.

Methods: This is a quasi-experimental study, of the pre- and post-test single group type, carried out in the Basic Health Units of Teresina, from October 2017 to January 2018. A sample of 35 pregnant adolescents was obtained by convenience. Quality of life was assessed using the Ferrans & Powers Quality of Life Instrument. For scores with normal distribution, Student's t-test was performed, and for those with non-parametric distribution, the Wilcoxon test was used and the significance level adopted was α=0.05.

Results: After the online educational intervention, there was an improvement in the total quality of life ($p<0.001$) and in health/functioning ($p<0.001$), socioeconomic ($p<0.001$) and psychological/spiritual ($p<0.001$) domains, except in the family domain.

Conclusion: The online educational intervention had an effect on quality of life, allowing it to be incorporated into the health education process with pregnant adolescents in Primary Health Care.

Resumo

Objetivo: Avaliar o efeito de intervenção educativa *online* na qualidade de vida de gestantes adolescentes.

Métodos: Estudo quase experimental, do tipo grupo único pré e pós-teste, realizado nas Unidades Básicas de Saúde de Teresina, no período de outubro de 2017 a janeiro de 2018. Amostra de 35 gestantes adolescentes obtida por conveniência e a qualidade de vida avaliada por meio do Instrumento de Qualidade de Vida de *Ferrans & Powers*. Para escores de distribuição normal foi realizado o teste *t* e para os de distribuição não-paramétrica o teste *Wilcoxon* e o nível de significância adotado foi α=0,05.

Resultados: Após a intervenção educativa *online* houve melhora da qualidade de vida total ($p<0,001$) e nos domínios saúde/funcionamento ($p<0,001$), socioeconômico ($p<0,001$) e psicológico/espiritual ($p<0,001$), exceto no domínio família.

Conclusão: a intervenção educativa *online* teve efeito na qualidade de vida, permitindo que ela seja incorporada no processo de educação em saúde com gestantes adolescentes na atenção básica à saúde.

Resumen

Objetivo: Evaluar el efecto de una intervención educativa *online* en la calidad de vida de embarazadas adolescentes.

Métodos: Estudio cuasi experimental, tipo grupo único antes y después de la prueba, realizado en las Unidades Básicas de Salud de Teresina, en el período de octubre de 2017 a enero de 2018. Muestra de 35 mujeres

[1]Department of Nursing, Universidade Estadual do Piauí, Teresina, PI, Brazil.
[2]Department of Nursing, Universidade Federal do Piauí, Teresina, PI, Brazil.
[3]Escola de Enfermagem de Ribeirão Preto, Universidade São Paulo, Ribeirão Preto, SP, Brazil.

Conflicts of interest: this study is part of a thesis entitled "*Tecnologia informacional e educacional para qualidade de vida de gestantes adolescentes*", *Universidade Federal do Piauí*, 2018.

embarazadas adolescentes, obtenida por conveniencia, y calidad de vida evaluada mediante el Instrumento de Calidad de Vida de *Ferrans & Powers*. Para la puntuación de distribución normal se realizó el test-T y para la de distribución no paramétrica, la Prueba de Wilcoxon. El nivel de significación adoptado fue α=0,05.

Resultados: Luego de la intervención educativa *online*, hubo una mejora de la calidad de vida total (p<0,001) y de los dominios salud/funcionamiento (p<0,001), socioeconómico (p<0,001) y psicológico/espiritual (p<0,001), excepto en el dominio familia.

Conclusión: La intervención educativa *online* tuvo efecto en la calidad de vida, lo que permitió que esta se incorpore en el proceso de educación para la salud para mujeres embarazadas adolescentes en la atención básica en salud.

Introduction

In Latin America and the Caribbean, the rate of pregnancy in adolescence is high and due to all the biopsychosocial implications that this event can cause in this period of life, it is considered a public health problem. Given this reality, educational health interventions with pregnant adolescents are important, as they can minimize the changes caused by pregnancy that include, in addition to maternal and child biological risks, negative consequences in the psychological, social and economic spheres, generating fear of social reaction, early maturation, restriction of leisure activities, disruption of social ties, school dropout, lower access to the labor market, economic dependence on parents or partner, which contributes to the perpetuation of intergenerational cycles of poor health and poverty.[1,2]

These changes caused by pregnancy in adolescence tend to affect quality of life (QoL), defined in this study as individual subjective perceptions that are influenced by aspects related to socioeconomic, family, spiritual, psychological conditions and organic functioning.[3]

When thinking about educational hospitalizations in health for pregnant adolescents, the technological advances obtained after the advent and massification of the internet must be considered, as adolescents constantly use digital Information and Communication Technologies (ICTs). International and national researches have shown the use of digital ICTs by adolescents for identity formation and obtaining health information.[4,5]

With regard to pregnancy, adolescents are in great demand on the internet to obtain information and resolve doubts, in order to learn the precautions they should adopt to obtain a healthy lifestyle during and after pregnancy.[6-8] Studies show that health education interventions offered through digital ICTs are more successful with regard to the acquisition of knowledge and health promotion related to prenatal education, encouragement of breastfeeding and smoking cessation.[7-10]

On the national scene, there is a lack of studies that demonstrate the use and effect of digital ICTs with pregnant adolescents and because they represent an educational alternative that can promote maternal and child health and, as a consequence, improve QoL throughout the entire pregnancy and childbirth process, giving rise to the proposal of this study. The aim of this study was to assess the effect of online educational intervention on pregnant adolescents' QoL.

Methods

This is a quasi-experimental study, of the pre- and post-test single group type, carried out in the Basic Health Units (BHU) of Teresina, from October 2017 to January 2018.

The population consisted of all pregnant adolescents (n=108) who were registered at the BHU in Teresina by e-SUS and who attended prenatal consultations with nurses from the Family Health Strategy (FHS). The sample was obtained by convenience and consisted of 35 pregnant adolescents who were selected according to the following inclusion criteria: being pregnant aged between 10 and 19 years; performing prenatal care in one of the FHS teams linked to the BHU in Teresina; having access to the internet through its own technological device or that of third parties (partner, family, school, Internet cafe); and having a contact phone. The following exclusion criteria were adopted: missing prenatal consultations on the day scheduled by the FHS team; not having education; having difficulties understanding the questions in the question-

naire and some stage of the virtual learning object; and having a gestational age greater than or equal to 36 weeks due to the proximity of the probable date of delivery, which may compromise the follow-up in the study. It was adopted as a criterion for giving up or losing the pregnancy to have interrupted and to give up participating in the research.

Forty-two pregnant adolescents did not meet the inclusion criteria, twenty-three were excluded for presenting one or more items of the exclusion criteria, and three refused to participate in the study. After starting data collection, five participants withdrew.

The characterization of pregnant adolescents involved the use of a questionnaire adapted from the research by Prudencio and the Brazilian Institute of Geography and Statistics (IBGE - *Instituto Brasileiro de Geografia e Estatística*), which presented sociodemographic, obstetric and data related to the use of digital ICTs.[11, 12]

To assess pregnant adolescents' QoL, the instrument Ferrans and Powers Quality of Life Index (IQVFP) was used, which is generic and has 33 questions and four domains: health/functioning, psychological/spiritual, socioeconomic and family, to measure QoL with regard to the satisfaction and importance attributed by individuals, considering values and beliefs. It was translated, adapted and validated by Kimura and Silva.[13]

The health/functioning domain involves issues related to physical and mental health in general, discomfort, physical independence, energy for daily activities, sex life, health care, control over one's life, long life, family responsibilities, being useful to the people, concerns, leisure activities and the possibility of a happy future (13 questions: 1-7, 11, 16-18, 25 and 26). The psychological/spiritual domain covers the issues of peace of mind, faith in God, personal goals, happiness, life satisfaction, personal appearance and self (7 questions: 27-33). The socioeconomic domain lists questions related to education, friendships, people's support, work, financial independence and socioeconomic conditions (8 questions: 13, 15, 19-24). The family domain includes questions about family health, children, family happiness, possibility of having a child, spouse and family support (5 questions: 8-10, 12 and 14).[13]

The answers to the 33 questions related to satisfaction and importance range from 1 to 6 (1=very dissatisfied and 6=very satisfied). To calculate the score, it is necessary that, initially, the score of the 33 satisfaction items is recoded, subtracting 3.5 from each one of the answers, which will result in scores ranging from -2.5 to +2.5. The recoded satisfaction scores are multiplied by the corresponding importance, which will range from -15 to +15. To eliminate negative scores, add 15 to each of the items, with values ranging from 0 to 30. The total QoL score is obtained by the sum of all weighted items, followed by division by the total number of items answered. Thus, they will also show values between zero and 30. In the QoL score per domain, a calculation similar to the total score is used, but only the items of the domain involved are considered.[13]

Data collection took place in the following phases:

- **Phase 1: (*study participant recruitment*) -** Recruitment took place during a face-to-face meeting at the BHU where pregnant adolescents were registered, between October and November 2017. At this meeting, the researcher stated the research objective, checked inclusion and exclusion criteria and made an invitation to participate. When the pregnant woman met the inclusion criteria and accepted to participate in the research, by signing Informed Consent Forms (ICF) or Informed Assent Form (IAF). In the case of pregnant women under 18 years old, they were registered in the online educational intervention and the login and password were provided individually by telephone. The invitation to pregnant women under 18 only took place after the authorization of parents or guardians upon signing the ICF.
- **Phase 2: (*characterization and application of the IQVFP before the online educational intervention*) –** the characterization of pregnant adolescents and application of the IQVFP took place in a face-to-face meeting at the BHU where they were registered, from November to

December 2017. Then, the pregnant adolescents were adapted to the online educational intervention.

- **Phase 3: (*online educational intervention implementation*)** – the implementation took place through the access of pregnant adolescents to the online educational intervention from December 2017 to January 2018. The online educational intervention dealt with the virtual learning object (VLO) on prenatal care and was considered valid by judges in health nursing of women and informatics. A The online educational intervention on prenatal care was called GESTAQ and lasted for five weeks. In week 1, an ambiance was carried out and videos were made available to pregnant women for the presentation and demonstration of how to use the GESTAQ, as well as a welcome forum for the interaction of pregnant women with each other, with the researcher and tutors (Figure 1). Week 2 addressed prenatal care, the importance of consultations and the development of pregnancy. Week 3 addressed the doubts, fears and fantasies related to pregnancy and childbirth. Week 4 covered delivery, from planning to identifying warning signs and types of delivery. Week 5 addressed newborn care.[14] During the intervention implementation, the content posted the week before remained available for access by pregnant women, who could even save the material in their own file. From week 2, there was on the initial screen of the intervention a brief description of the contents that were covered in video format, which always ended with an invitation for pregnant adolescents to interact with each other and with the tutors using the asynchronous interaction tool for the discussion forum, to make a comment or even answer questions about the topics covered that week.[14]
- **Phase 4: (*application of the IQVFP after the online educational intervention*)** – the application of the IQVFP after the online educational intervention took place in a face-to-face meeting, at the BHU where they were registered, in January 2018.

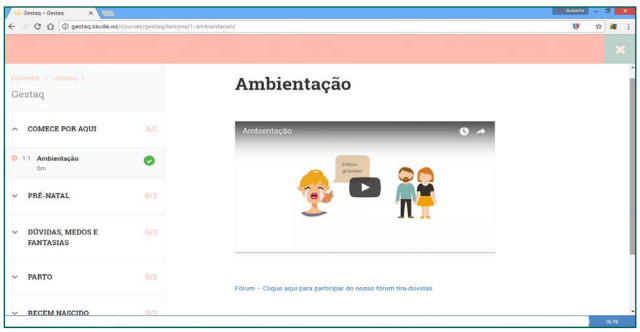

Figure 1. Presentation screen of the GESTAQ setting

The data obtained were coded to create a data dictionary. Then, the transcription was performed, by the double-entry process, using spreadsheets from the Microsoft Excel 2010 program. Once the errors were corrected, the data were exported and analyzed in the SPSS version 20.0 program.

Qualitative variables of sociodemographic, obstetric and use of digital ICTs by pregnant adolescents were described by absolute and relative frequencies, and quantitative variables by mean, standard deviation, minimum and maximum.

The QoL scores obtained through the IQVFP instrument, which represent quantitative variables, were described using the mean and standard deviation statistics. When comparing the QoL scores obtained before and after the online educational intervention, initially, the Kolmogorov-Smirnov test was used to assess variable normality. The QoL scores that showed adherence to the normal distribution were submitted to Student's t-test, while the scores that did not show normal distribution were assessed by the non-parametric Wilcoxon test. In the tests performed, α=0.05 was adopted as a significance level. Thus, the test results that presented α less than 0.05 were considered statistically significant.

The research project was approved by the Research Ethics Committee (REC) of the *Universidade Federal do Piauí* (Opinion 1,837,209), according to the principles of Resolution 466/12 of the Brazilian National Health Council (*Conselho Nacional de Saúde*) (CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) 59795616.0.0000.5214 - Opinion 1.837.209).

Results

Among the 35 pregnant adolescents who participated in the online educational intervention, the mean age was 16.6 years (SD±2.1) and the distribution was balanced between single (45.7%) and those who lived with a partner (54.3%).

Most of the pregnant adolescents had mixed ethnicity (85.7%), were in high school (60.0%) and continued studying (57.1%). Of those who discontinued the study (42.9%), some (22.9%) mentioned pregnancy as the cause. Pregnant adolescents who lived with a monthly income of less than one minimum wage (42.9%) were predominant, followed by those with income between one and less than two minimum wages (57.1%). Among pregnant adolescents, most did not work (97.1%) and were Catholic (62.9%).

As for obstetric characteristics, pregnant adolescents who were in the third gestational trimester (51.4%), who had no previous children (82.9%) and no history of abortion (80.0%) predominated. Among those with a history of previous pregnancy (delivery and/or abortion), most had undergone prenatal care (22.9%). In the current pregnancy, most started prenatal care in the first trimester (68.6%) and were satisfied (97.1%) and 97.1% had family support.

According to Table 1, all (100.0%) had a cell phone, only a small portion had a computer (2.9%) and no tablet. Most used a technological device daily (80.0%), and all pregnant adolescents reported using it predominantly at home (100.0%). As for the internet, most mentioned having access at home (91.4%), using this technological resource daily (277.1%) and predominantly at home (97.1%). Considering the means of information available to clarify doubts about pregnancy, the internet was highlighted, in which 74.3% of pregnant adolescents mentioned its use. Among the other means of information, the most mentioned were family, neighbors and/or friends (45.7%), health professionals (31.4%) and health center (22.9%).

The total QoL scores, by domains and their comparison before and after the online educational intervention are presented in Table 2.

Table 1. Distribution of the use of means of information to clarify doubts about pregnancy by adolescents participating in the online educational intervention (n=35)

Use of means of information	No n(%)	Yes n(%)
Television	31(88.6)	4(11.4)
Radio	35(100.0)	-(-)
Magazine	35(100.0)	-(-)
Newspaper	35(100.0)	-(-)
Book	34(97.1)	1(2.9)
Booklet	34(97.1)	1(2.9)
Leaflets	33(94.3)	2(5.7)
Internet	9(25.7)	26(74.3)
Family, neighbors and friends	19(54.3)	16(45.7)
Health professionals	24(68.6)	11(31.4)
Health center	27(77.1)	8(22.9)
Hospital or maternity	33(94.3)	2(5.7)

Table 2. Total QoL scores and by domains of pregnant adolescents before and after the online educational intervention (n=35)

QoL	Means		p-value
	Before Mean ± SD	After Mean ± SD	
Total	24.1 ± 3.1	25.2 ± 2.9	<0.001[a*]
Health/functioning	22.5 ± 4.1	24.3 ± 3.5	<0.001[a*]
Family	28.2 ± 2.5	28.3 ± 2.6	0.500[b]
Socioeconomic	19.5 ± 5.4	21.2 ± 5.6	<0.001[a*]
Psychological/spiritual	26.0 ± 4.4	27.1 ± 3.7	<0.001[b*]

[a] Student's t-test for paired samples; [b]Wilcoxon test; p-value < 0.05

The mean of the total QoL scores before and after the online educational intervention was 24.1 (SD±3.1) and 25.2 (SD±2.9), respectively. Before and after the online educational intervention, the highest score was found in the family domain 28.2 (SD±2.5) and the lowest in socioeconomic 21.2 (SD±5.6)

When comparing the mean of total QoL scores before and after the online educational intervention, it was observed that there was a significant association (p<0.001). Except for the family domain (p<0.500), all the others showed a significant association before and after the online educational intervention: health/functioning (p<0.001), socioeconomic (p<0.001) and psychological/spiritual (p<0.001).

Discussion

The pregnant adolescents who participated in the study had sociodemographic characteristics similar to those of other studies carried out in Brazil.[15,16]

Most participants started prenatal care in the first trimester and showed satisfaction with the consultations. A study that characterized the prenatal care of pregnant adolescents in southern and northeastern Brazil found that the majority also started prenatal care in the first gestational trimester.[16] Prenatal care and its early start, in the first gestational trimester, is necessary to ensure QoL provided by health professionals and services, as well as to minimize maternal and child risks. Family support is essential to reduce biopsychosocial complications of pregnancy in adolescence.[17]

The use of digital ICTs as a means of information was present among participants. Most reported that the internet was the main source for clarifying doubts about pregnancy, with family, neighbors and/or friends being the second largest means of information. The search for formal information about pregnancy through health professionals was the third most mentioned by the sample.

The use of digital ICTs and internet access found in this study coincide with information from IBGE. [12] In turn, such data combined with the high use of the internet as a source of information to clarify doubts about prenatal care provided good adherence among participants to the online educational intervention.

The mean of total QoL scores before 24.1 (SD±3.1) and after the online educational intervention 25.2 (SD±2.9) in this study was similar to the results of other studies that also assessed QoL in adult postpartum women and adolescents through the application of the IQVFP.[18,19]

A study that assessed low-risk pregnant women's QoL in Teresina obtained a total QoL score of 23.9 and, therefore, lower than this study.[20] Another that compared pregnant women's QoL with and without sexual dysfunction pointed out in their results that pregnant women with sexual dysfunction had a lower total QoL score (22.2), while pregnant women without sexual dysfunction had a higher total QoL score (24.2).[21] In Paraíba, a study compared the QoL of pregnant women with and without hypertension and the result showed a lower total QoL score in hypertensive pregnant women (20.15) and a higher total QoL score in non-hypertensive pregnant women (21.36).[22]

A survey of postpartum women's QoL carried out at a teaching hospital in the city of Uberaba, state of Minas Gerais, also found a lower QoL score (22.3) in the socioeconomic domain and higher QoL score (27.6) in the family domain, revealing the importance of family support for 9.7% of puerperal women who participated in the survey and were adolescents.[18] Another study carried out with adolescents who left at a teaching hospital also found a lower score in the socioeconomic domain (17.3) and a higher score in the family domain (25.3).[19]

The socioeconomic domain involves issues related to the support provided by people, friendships, work, housing, education and financial needs.[13] Such aspects only become a concern for adolescents when they become pregnant. Mainly, given the socioeconomic situation in which they find themselves at that time, a fact that can be seen among the study participants, in which those who did not work and survived with a family income of less than two salaries predominated, in addition to the majority reporting that they had or were attending high school, with a relevant rate of interruption of studies. These characteristics can lead to the perpetuation of poverty if adolescents do not receive adequate support from their families, society and health services.[2]

In contrast, in this study, all QoL domains showed a significant association before and after the online educational intervention, except for the family domain ($p<0.500$). This may have been due to the fact that this domain was the one with the highest score before the online educational intervention, not requiring so much adjustment. Another fact is that the online educational intervention was aimed only at pregnant adolescents and did not involve their support network. The family domain consists of questions related to the family (health, happiness and support provided), child and spouse.[13]

Another aspect is that in this study, adolescents who lived with a partner and who had family support predominated, reflecting a good assessment of the family domain. The finding reinforces the role played by family members and spouse in supporting pregnant adolescents, in order to improve their QoL.[19]

Although the family domain did not show a significant association before and after the online educational intervention, all others were healthy/functioning ($p<0.001$), socioeconomic ($p<0.001$) and psychological/spiritual ($p<0.001$). A similar impact was observed in a study carried out in Curitiba, which assessed pregnant adolescents' QoL before and after an educational intervention in person, obtaining an improvement in the IQVFP in all domains, except in the family domain.[23]

International studies point to the effectiveness of educational interventions for pregnant women mediated by digital ICTs, showing positive effects in the expansion of knowledge, in addition to demonstrating that health education through digital ICTs is effective and the preferred means by pregnant women.[7-10]

In this way, online educational interventions can improve pregnant adolescents' QoL, as this instrument provides this target audience with safe, valid guidelines that are essential for clarifying doubts about pregnancy and the puerperium. In the case of this study, the educational intervention was online and addressed aspects related to prenatal care and had the advantage of allowing pregnant adolescents to access it as often, at the time and place as they wished, without the need to travel to the BHU. These advantages may have been attractive to the target audience and impacted the improvement of the total QoL score and almost all domains, since the study participants said that the internet was the most used means of information to clarify doubts about prenatal care.

Another factor that deserves to be highlighted was the social support offered to pregnant adolescents, through which they were able to maintain interaction with the researcher and clarify doubts they had about the pregnancy-puerperal process and child care. The social support provided is able to overcome some difficulties faced by adolescents in prenatal consultations, including fear and shame in face-to-face consultations, flexible schedules and the spatial barrier transposition.[24] Finally, it is believed that this support has generated positive effects in the socioeconomic domain. The significant association in the psychological/spiritual domain may have occurred because it consists of issues related to peace of mind, happiness and satisfaction with life, which may have been caused both by the expansion of knowledge about prenatal care.

Conclusion

Regarding the total QoL score of pregnant adolescents and with the exception of the family domain score, all other health/functioning ($p<0.001$), socioeconomic ($p<0.001$) and psychological/spiritual ($p<0.001$) domain scores improved after online educational intervention. It is believed that the online educational intervention can be incorporated into the health education process of pregnant adolescents in Primary Health Care, as it represents a complementary tool to the educational process carried out by nurses. The intervention can be offered completely online without the need for pregnant adolescents to travel to the BHU, even avoiding, nowadays, contamination by the new coronavirus and the overload of the health system, in addition to acting as support for the guidelines given in the prenatal consultation. The sample size is noteworthy as a limitation of this study, which occurred mainly due to the difficulty of accessing the internet and the lack of pregnant adolescents to prenatal consultations at the BHU. It is suggested to carry out other studies that can observe the retention of pregnant adolescents' QoL for a period of 30 or 60 days after the online educational intervention.

Collaborations

Santiago RF contributed with conception and design, data analysis and interpretation, and article writing. Nery IS and Andrade EMLR contributed to project design, relevant critical review of intellectual content and final approval of the version to be published. Mendes IAC, Nogueira MTO, Rocha SS and Araújo TME contributed with relevant critical review of intellectual content.

References

1. Pan American Health Organization (PAHO). United Nations Population Fund (UNFPA). Adolescent pregnancy in latin america and the caribbean. Technical brief. EUA: PAHO; UNFPA; 2020 [cited 2021 Jan 16]. Available from: https://iris.paho.org/bitstream/handle/10665.2/53133/PAHOFPLHL200019_eng.pdf?sequence=1&isAllowed=y
2. Cremonese L, Wilhelm LA, Demori CC, Prates LA, Barreto CN, Ressel LB. Experiences from the puerperal period according to the viewpoint of adolescent women. Rev Fund Care Online. 2019;11(5):1148-54.
3. Ferrans CE. Development of a conceptual model of quality of life. In: Gift AG, editor. Clarifying concepts in nurse research. New York: Spring; 1997. p. 111-21.
4. Haruna H, Hu X, Chu SK, Mellecker RR, Gabriel G, Ndekao PS. Improving sexual health education programs for adolescent students through game-based learning and gamification. Int J Environ Res Public Health. 2018;15(9):2027.
5. Widman L, Nesi J, Kamke K, Choukas-Bradley S, Stewart JL. Technology-based interventions to reduce sexually transmitted infections and unintended pregnancy among youth. J Adolesc Health. 2018;62(6):651-60. Review.
6. Govender D, Naidoo S, Taylor M. Knowledge, attitudes and peer influences related to pregnancy, sexual and reproductive health among adolescents using maternal health services in Ugu, KwaZulu-Natal, South Africa. BMC Public Health. 2019;19(1):928.
7. Ames HM, Glenton C, Lewin S, Tamrat T, Akama E, Leon N. Clients' perceptions and experiences of targeted digital communication accessible via mobile devices for reproductive, maternal, newborn, child, and adolescent health: a qualitative evidence synthesis. Cochrane Database Syst Rev. 2019;10(10):CD013447.
8. Munro S, Hui A, Salmons V, Solomon C, Gemmell E, Torabi N, et al. SmartMom text messaging for prenatal education: a qualitative focus group study to explore canadian women's perceptions. JMIR Public Health Surveill. 2017;3(1):e7.
9. Flax VL, Ibrahim AU, Negerie M, Yakubu D, Leatherman S, Bentley ME. Group cell phones are feasible and acceptable for promoting optimal breastfeeding practices in a women's microcredit program in Nigeria. Matern Child Nutr. 2017;13(1):10.1111/mcn.12261.
10. Sloan M, Hopewell S, Coleman T, Cooper S, Naughton F. Smoking cessation support by text message during pregnancy: a qualitative study of views and experiences of the MiQuit intervention. Nicotine Tob Res. 2017;19(5):572-7.
11. Prudêncio PS. Adaptação cultural e validação para o uso no Brasil do intrumento Patient Expectations and Satisfaction with Prenatal Care (PESPC) [dissertação]. Ribeirão Preto (SP): Escola de Enfermagem, Universidade de São Paulo; 2012. [citado 2017 Aug 26]. Disponível em: https://teses.usp.br/teses/disponiveis/22/22133/tde-07112012-153618/publico/PatriciaPrudencio.pdf .
12. Instituto Brasileiro de Geografia e Estatística (IBGE). Pesquisa Nacional por Amostras de Domicílios – Acesso à internet e à televisão e posse de telefone móvel celular para uso pessoal: 2015. Rio de Janeiro: IBGE; 2016. 90 p. [citado 2018 Mar 23]. Disponível em: https://biblioteca.ibge.gov.br/visualizacao/livros/liv99054.pdf
13. Kimura M, Silva JV. Ferrans and powers quality of life index. Rev Esc Enferm USP. 2009;43(Spe):1098-104.
14. Santiago RF, Andrade EM, Mendes IA, Viana MC, Nery IS. Evaluation of a prenatal virtual learning object for pregnant adolescents in primary care. Acta Paul Enferm. 2020;33:1-12.
15. Albuquerque AP, Pitangui AC, Rodrigues PM, Araújo RC. Prevalence of rapid repeat pregnancy and associated factors in adolescents in Caruaru, Pernambuco. Rev Bras Matern Infant. 2017;17(2):355-63.
16. Vieira EM, Bousquat A, Barros CR, Alves CG. Adolescent pregnancy and transition to adulthood in young users of the SUS. Rev Saúde Pública. 2017;51:25.
17. Thomazi IF, Wysocki AD, Cunha MC, Silva SR, Ruiz MT. Risk factors related to premature labor in pregnant adolescents: an integrative literature review. Enferm Global. 2016;15(44):416-27.
18. Silva SG, Condeles PC, Parreira BD, Silva SR, Paschoini MC, Ruiz MT. Influence of sociodemographic, clinical, obstetric and neonatal variables on postpartum quality of life. Rev Enferm UERJ. 2019;27:e44636.
19. Ferreira FM, Haas VJ, Pedrosa LA. Quality of life of adolescents after maternity. Acta Paul Enferm. 2013;26(3):245-49.
20. Barbosa AK, Queiroz BF, Teixeira DR, Mourão EC, Cantanhede GM, Carvalho KR, et al. Qualidade de vida das gestantes de baixo risco de Teresina – PI. Rev Eletr Acervo Saúde. 2019;11(16):1-8.
21. Bezerra IF, Sousa VP, Santos LC, Viana ES. Comparação da qualidade de vida em gestantes com disfunção sexual. Rev Bras Ginecol Obstet. 2015;37(6): 66-71.
22. Falcão KP, Antunes TP, Feitosa AN, Victor EG, Sousa MN, Abreu LC, et al. Association between hypertension and quality of life in pregnancy. Hypertens Pregnancy. 2016;35(3):306-14.
23. Cruz MV, França SQ, Gruber C. Informação e qualidade de vida de no período gestacional. Cad Escola Saúde. 2014;1(5):14-22.
24. Poffald L, Hirmas M, Aguilera X, Vega J, González MJ, Sanhueza G. [Barriers and facilitators to antenatal care in adolescents: results of a qualitative study in Chile]. Salud Publica Mex. 2013;55(6):572-9. Spanish.