International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

A Study to Evaluate the Effectiveness of Structured Teaching Practice on Knowledge Regarding the Impact of Mobile Phones Usage during Conception among Ante-Natal Mothers in Selected Community Area

Ambli V.

Professor and HOD Dept of Obstetrics and Gynecological Nursing
Hillside College of Nursing, No. 9, Raghuvanahalli, Kanakapura Main Road, Gubbalala Cross, Bangalore 560109, Karnataka, India
Email: *venuambli[at]gmail.com*

Abstract: ***Mobile phones are now an integral part of modern telecommunication. As the fastest growing telecommunication market in the world, India is projected to have 1.159 billion mobile subscribers by 2013. According to the International Tele Communication Union report, the world wise spread of number of cell phone subscriptions has reached 5 billion (mild 2010) with more than half of all users being pregnant women and children. Methodology: A quantitative evaluative research approach with pre experimental one group pre test and post test research design was used to assess the effectiveness of Structured Teaching Programme on knowledge regarding impact of mobile phones usage during conception among antenatal mothers. The simple random sampling technique was employed to select the 30 samples of antenatal mothers. Self administered structured knowledge questionnaire was used to collect the information from the study samples. The study was conducted in selected community area, Bengaluru. The data was analyzed by descriptive and inferential statistics. Results: Findings of the study revealed that the overall post-test mean score was 36.33 (121.1%) with standard deviation 2.52 and the respondents knowledge were significantly higher than the overall mean pre-test knowledge scores 28.33 (94.43 %) with standard deviation 1.96 and computed paired 't' value 37.4 is higher than table 2.02 at p< 0.05 level. Hence the Structured Teaching Programme on knowledge regarding impacts of mobile phone usage among ante-natal mothers was effective statistically significant. The study reveals that there is significant association between selected demographic variables like age, religion, and previous knowledge in relation with post-test knowledge scores of ante-natal mothers a p< 0.05. Data was analysed using descriptive and inferential statistics. Conclusion: The study also concludes that the structured teaching programme is an effective method in providing moderate to adequate level of knowledge regarding impacts of mobile phone usage among antenatal mothers.***

Keywords: Assess, Effectiveness, Structured Teaching Programme, Knowledge, Impacts of mobile phone usage, Antenatal mothers

1. Introduction

Mobile phone is a long range, portable electronic device used for communication, text messaging, for access to the internet, and multimedia messaging. As a result, many people including pregnant women spend their large part of the time with mobile phones. The cell phone radiations cause many ill effects affecting the physical, mental, and the emotional state of pregnant women. Radio Frequency Radiation (RFR) emitted from wireless devices increases rapidly and the most sensitive groups are pregnant women and children.

The women when she becomes pregnant, the next 40 weeks she will be on a truly exciting journey as she actively takes part in the miracle of creating a new life. Filled with physical changes, physiological changes and emotional changes, pregnanc/y can be an intense time in the life of an expecting mother's heart and mind, and it can be referred as a transformational experience. These 40 weeks of pregnancy age broken in to three frames of references each trimester is filled with distinct pattern of foetus development, emotional changes and physical changes to the pregnant women body. The first trimester is a time of crucial development in the baby. Most miscarriages occur during this trimester and often a women's experiences a pregnancy lose before she even realises that she was pregnant.

When the pregnant women use mobile phone, the radio waves emitted are absorbed into the body tissues as energy, which adds to the energy being produced by body's metabolism. This can cause a rise in temperature in body and more specifically in the surface of head which leads to penetration of the blood brain barrier causing disturbed 15 neuromuscular functions. The electromagnetic radiations interact with body in a different way and causes harmful effect to the pregnant women, foetus and children.

Pregnant women who are exposed to these radiations frequently can result in general effects like thermal effects, non-thermal effects, genotoxic effects, electromagnetic hypersensitivity and cancer. The specific effects on pregnancy include embryo growth ceasing, miscarriage, birth defects and neurological disorders in children. Few studies have investigated the effect of electromagnetic waves on the human fetus whereas nowadays mobile phone use is ubiquitous. The aim of this study was to evaluate the association between mobile phone use by pregnant women and fetal development during pregnancy in the general population. The use of equipment that emits radio frequency electromagnetic field (RF-EMF) has increased tremendously during the last 30 years and human exposure is widespread.

The most frequently used technology relates to cell phones. In 2012, a Norwegian Experts Committee, established by the Norwegian Ministry of Health and Care Services, reviewed the evidence on possible negative health effects from weak RF fields. After assessing a large number of studies, they concluded that no evidence of adverse health effects from exposure to weak RF fields was found. Other expert reviews, intitated also by the increasing public concern, have reported similar conclusions. However there were few studies on reproductive and offspring's developmental health, including neurodevelopment.

In a series of studies within the Danish National Birth Cohort, associations between maternal and child cell phone use and developmental milestones and behaviour of children were investigated. Information on maternal cell phone use was collected retrospectively when the child was 7 years old. These studies reported an increased odds ratio for problematic behaviour at 7 years of age related to cell phone use during pregnancy. However, no association was found between cell phone use during pregnancy and offspring's developmental milestones at 6 and 18 months of age. In a Dutch birth cohort study, no association was found between prenatal exposure to cell phones or cordless phones and behavioural problems at the age of 5 years. In a Spanish birth cohort study researchers found no associations between maternal cell phone use 16 during pregnacy and child's early mental development. However this is the only study in which child's mental and psychomotoric development was accessed by phychologists, while the number of partcipants was lower than the Dutch and Danish studies.

As cell phone use has become abundant, cell phone based interventions and monitoring are applied also in the field of maternity and antenatal health care because of it's lowcost. It has been shown to be also a relatively effective tool of public health promotion, especially in developing countries. However, the other side of the coin is that is important to investigate if there are any health effects related to exposure to electromagnetic fields during critical developmental periods, such as the intrauterine life and early childhood. The aim of this study was to investigate any association between maternal phone use during first trimester and a) language skills at 3 years, and b) communication, gross and fine motor skills at 3 an 5 years of age, in a large prospective birth cohort.

Radiofrequency radiation (RFR) emitted from wireless devices increases rapidly and the most sensitive groups are pregnant women and children. Therefore, we aimed to evaluate the fidgety movements and motor repertoires of the infants of pregnant women with different durations of mobile phone usage in the prenatal period by performing a general movement assessment. Using a mobile phone for calls for more than 30 min per day during pregnancy may have a negative impact on fetal growth. A prospective study should be performed to further evaluate this potential link.

Hypothesis

H1: There will be significant differences in the level of pre-test and post-test knowledge scores on impacts of mobile phone usage during conception among ante natal mothers of selected community areas.

H2: There will be significant association between the selected demographic variables and post-test knowledge scores of antenatal mothers in selected community area, Bengaluru, Karnataka.

2. Materials and Methods

The present study is evaluative research approach was adopted in ordered to assess the the effectiveness of structured teaching practice on knowledge regarding the impact of mobile phones usage during conception among ante-natal mothers in selected community area. An one group pre-test post-test (pre-experimental) design has been used to attain the objectives of the present study. After obtaining Institutional ethical clearance, study was conducted at Community, Bangalore. The independent variable in this study is structured teaching programme regarding impacts of mobile phone usage among antenatal mothers and dependent variable in this study is knowledge. The target population consists of ante-natal mothers from Kagalipura community health centre, Bangalore. Simple Random Sampling Technique is used for selecting the 30 sample of antenatal mothers to collect data. Data collection was carried out for a period of two months from March 2023 to May 2023. This data was entered into the excel sheets and analyzed using SPSS for windows, Version 16.0, Chi-square test was used for the evaluation of the level of significance.

The researcher adhered to several critical ethical considerations regarding obligations and responsibilities in the recruitment of participants and data collection.1] Approval has obtained from Institutional human ethics committee.2] Formal administrative permission was obtained from a nursing institute administration.3] Informed printed agreement was taken from the subjects.4] Maintain the confidentiality of data.

Sampling Criteria

The samples were selected with the following predetermined set of criteria.

Inclusion Criteria:

- Ante-natal women in Kagalipura Community Health Centre, Bengaluru, Karnataka.
- Who are willing to participate in the study?
- Who are present at the time of the study?

Exclusion criteria:

- Women under the age of 18 years
- Who are absent at the time of the study.

Selection and development of the tool

Development of tool was based on research study for the collection of data, multiple choice questionnaires used in this research study. A structured knowledge questionnaire is formulated after reviewing the literature to assess the knowledge regarding adverse effects of Internet usage among ante-natal mothers. There are 30 multiple choice questions and 8 demographic data. The tool consists of two sections:

Section 1

Demographic variables: It includes the demographic data

such as age, religion, education, type of family, occupation, previous knowledge on pregnancy, number of conception and had any miscarriage.

Section 2

Structured questionnaire: There are multiple choice questions to assess the knowledge of antenatal mothers regarding impacts of mobile phone usage. Total 30 items are selected for the correct 36 answer. Score value of 1 is allotted to each correct response. A total knowledge score is 30. Based on the percentage gained by the antenatal, the knowledge of the mother is categorized in the following groups.1. Poor knowledge: Below 50% (below 14) 2. Average adequate knowledge: 50-70% (15-21) 3. Good knowledge: Above 75% (22 and above) DEVELOPMENT OF STRUCTURED TEACHING The first draft of the structured teaching programme on impacts of mobile phone is developed based on the objectives of the study and is given to the guide along with objectives. Based on their suggestions and recommendation, the final draft of the structured teaching programme is developed.

Reliability

In order to establish reliability of the tool, the technique called Split Half method was used and reliability co-efficient was calculated by using raw score formula. The calculated 'r' value is 0.83 and the developed tool was found to be highly reliable.

Method of data collection

After receiving official authorization from the relevant authority, data was gathered from 30 participants, with the antenatal mothers chosen using a simple random approach. The subject's willingness to engage in the study was determined after the investigator gave a self-introduction and described the objective of the investigation. The individuals have been guaranteed of their anonymity and the confidentiality of the information they have supplied, and signed informed permission has been acquired. The pre-test was administered on the first day, followed by the structured teaching programme, after one week, and the post-test was administered using the same tool, each subject took 30 minutes to answer the tool.

3. Result

The data were analyzed on the basis of the study objectives, using both descriptive and inferential statistics. Findings are organized in the following headings.

Table 1: frequency and percentage distribution of Demographic profile of antenatal mothers

Age (in years)	Frequency	Percentage
Below 20 years	7	23.3%
Between 20-35 years	20	66.6%
Above 35 years	3	10%
Religion		
Hindu	12	40%
Christian	5	16.6%
Muslim	11	36.6%
Others	2	6.6%
Education		
10th	6	20%
12th	8	26.6%
Degree	16	53.3%
Type of Family		
Nuclear Family	19	63.3%
Joint Family	6	20%
Separated Family	5	16.6%
Occupation		
Working	12	40%
House-Wife	18	60%
Previous Knowledge on Pregnancy		
Yes	21	70%
No	9	30%
Number of conception		
One	9	30%
Two	14	46.6%
Above two	7	23.3%
Any miscarriages		
Yes	11	36.6%
No	19	63.3%

Table 2: Frequency and percentage distribution of respondents on pre-test knowledge level on impacts of mobile phone usage during conception among ante-natal mothers

Knowledge Level	Category	Respondents	
		Frequency	Percentage
Poor	≤50%	25	83.3%
Average	50-75%	5	16.6%
Good	≥75%	-	-
Total		30	100%

Table 2: Represents the distribution of ante-natal mothers on pre-test knowledge level.83.3% (25) of ante-natal mothers had poor knowledge, 16.6% (5) had average knowledge and none of them had good knowledge on impacts of mobile phone usage during conception among ante-natal mothers.

Table 3: Frequency and percentage distribution of respondents on post-test knowledge level on impacts of mobile phone usage among ante-natal mothers during conception

Knowledge Level	Category	Respondents	
		Frequency	Percentage
Poor	≤50%	0	0
Average	50-75%	29	96.6%
Good	≥75%	1	3.3%
Total		30	100%

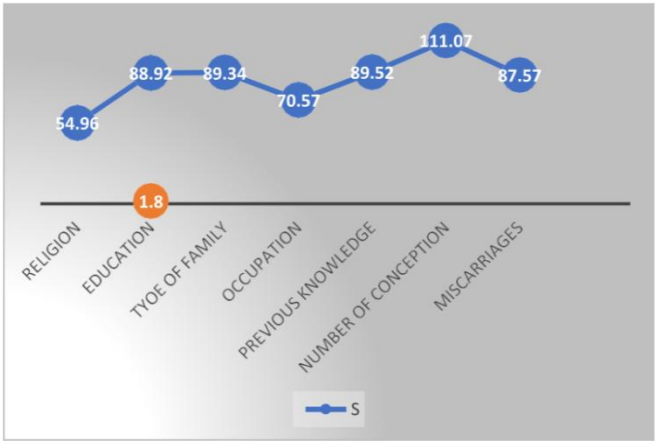

Table 3: Represents the distribution of ante-natal mothers on post test knowledge level 96.6% (29) had average knowledge, 3.3% (1) had good knowledge and 0% had poor knowledge on the impacts of mobile usage among ante-natal mothers during conception.

Table 4: Aspect wise pre-test and post-test mean knowledge of respondents on analysis of Ante-natal mothers regarding Impacts of mobile phone usage during conception

Sr No:	Area wise knowledge scores of ante-natal mothers.	Max. scores	Pre-test			Post-test			Percentage of Enhancement
			Mean	SD	Mean %	Mean	SD	Mean %	
1	General information related to Pregnancy.	4	0.93	0.94	23.25	2.67	0.57	66.75	43.5
2	Impacts of mobile phone usage among ante-natal mothers during conception.	15	6.17	1.56	41.13	11.9	0.72	79.33	38.20
3	Prevention of impacts of mobile phone usage among ante-natal mothers.	11	4.93	1.86	45.2	9.9	0.83	90	44.8

Represents the aspect wise pre-test and post-test mean, standard deviation, mean percentage and percentage of enhancement. With regard to the pre-test, the highest mean for impacts of mobile phone usage among ante-natal mothers during conception usage is 6.17 with standard deviation of 1.56 and mean percentage 41.13%. The lowest mean was for the general information related to pregnancy is 0.93 with standard deviation 0.94 and mean percentage 23.25%. With regard to the pre-test, overall mean with 12.08 with standard deviation 4.36 and mean percentage 40.26%. With regard to the post test, the highest mean for the impacts of mobile phone usage among ante-natal mothers is 11.9% with the standard deviation 0.72 and mean percentage 79.33%. The lowest mean was in respective to prevention of general information related to pregnancy 2.67 with standard deviation 0.57 and mean percentage 66.75%. With regard to the post test the overall mean was 23.3 with the standard deviation 2.12 and mean percentage of 77.66%

4. Discussion

The topic of the research study is" A study to assess the effectiveness of structured teaching programme on knowledge regarding impacts of mobile phone usage among antenatal mothers in selected community area at Bengaluru, Karnataka. "The following conclusions were drawn on the basis of the findings of the study which revealed that, in pre-test, none of the respondents had adequate knowledge 38 (95%). Respondents had inadequate knowledge and 2 (5%). Respondents had moderately adequate knowledge on impacts of mobile phone usage among antenatal mothers, before the implementation of the structured teaching programme.

After the structured teaching programme, the post-test knowledge score showed that, majority of the respondents 39 (95.5%) had adequate knowledge and 1 (2.5%), respondents had moderately adequate knowledge on impacts of mobile phone usage. So the aspect wise, mean post-test knowledge scores are higher than the mean pre-test knowledge scores. The post-test overall mean scores is 23.3 (77.66%) with standard 67 deviation of 2.12 were significantly higher than the pre-test overall mean score is 12.08 (40.26%) with standard deviation of which implies that the structured teaching programme on impacts of mobile phone usage among antenatal mothers was effective and statistically highly significant at $p<0.05$. The present study reveals that was significant association of post-test knowledge score of antenatal mothers at P level with the variables like age, religion, education, type of family, occupation, previous knowledge on pregnancy, number of conception and had any miscarriage of using mobile phones. But some of them reveal that there was no significant association with the variables like type of family. The result shows that antenatal of selected community area knowledge level improved after the implementation of the structured teaching programme on impacts of mobile phone. The study also concludes that the structured teaching programme is an effective method in providing moderate to adequate level of knowledge regarding impacts of mobile phone usage among antenatal mothers.

Limitations:

1) The study is limited only to antenatal mothers.
2) The sample size is limited to 30.
3) Data collection is limited via structured knowledge questionnaire.

5. Implications of the Study

The findings of the study can be used in the area of nursing practice, nursing education, nursing administration and nursing research.

Nursing Practice:

Nursing profession has been developing faster in recent years in a unique way.

The major change that has occurred in the profession is expansion in the role of nurses. One of the major roles that nurse play is educating the people regarding various health problems. Nurses have ultimate responsibility in educating people especially antenatal mothers regarding the impact of mobile phone usage. So, it is very essential for the nurses to acquire necessary knowledge regarding impacts of mobile phone usage such that they can guide the antenatal mothers which will help them to deal with their problems related to mobile phone usage.

Nursing Education:

1) As a nurse educator, there are abundant opportunities available for nursing professionals to educate students regarding prevention of impact of mobile phone usage among antenatal mothers.
2) Nurse educators can use the findings of the study to understand what different strategies can be adopted for educating students regarding prevention of impacts of mobile phone usage.

3) As a nurse educator, there are abundant opportunities available for nursing professionals to educate students as well as their family members regarding prevention of impacts of mobile phone usage among antenatal mothers.

Nursing Administration:

Nurses are challenge to play the role of efficient administrator as well as practitioners. So, the nurse administrator should arrange a power-point presentation for students regarding impacts of mobile phone usage among antenatal mothers.

1) This will help the nurse administrator to prepare adequate learning materials for giving power-point presentation in the community area.
2) This will help the nurse administrator to emphasis and encourage the nurses to use different strategies to educate students regarding impacts of mobile phone usage among antenatal mothers.
3) Nursing personal should be prepared to take leadership role in educating the students regarding impacts of mobile ph0ne usage among antenatal mothers.

Nursing Research:

The importance of research in nursing is to build the body of knowledge. The findings of the present study serve as the basis for the professionals and the students to conduct further studies.1. The study will motivate the beginner researchers to conduct same study with different variables on a large scale.2. Nurses should come forward to take up unsolved questions in the field and nursing fraternity. Even the public agencies should also encourage the researchers in the field through materials and funds.

6. Recommendations

On the basis of the findings, following recommendation has been made:

1) A replication of present study can be conducted with a larger population.
2) A similar study can be conducted in the community area.
3) A comparative study can be conducted in different settings in urban areas,
4) Pamphlets and leaflets can be prepared with the guidance of structured teaching programme and distributed among the antenatal mothers to get awareness about impacts of mobile phone usage among antenatal mothers.

7. Conclusion

The result shows that antenatal of selected community area knowledge level improved after the implementation of the structured teaching programme on impacts of mobile phone. The study also concludes that the structured teaching programme is an effective method in providing moderate to adequate level of knowledge regarding impacts of mobile phone usage among antenatal mothers.

References

[1] Alam T., Choudhary A. K. Maternal heart rate variability during different trimesters of pregnancy. Natl. J. Physiol. Pharm. Pharmacol.2018; 8 (11): 1475-1480. [Google Scholar]

[2] Alattar E. M., Elwasife K. Y., Radwan E. S., Abu Warda H., Abujami M.2018. An experimental investigation of the impact of electromagnetic radiations emitted from mobile phone on general health, pH, flow rate and electrolytes concentrations of saliva. [Google Scholar]

[3] Al-Bayyari N. The effect of cell phone usage on semen quality and fertility among Jordanian males. Middle East Fertil. Soc. J.2017; 22 (3): 178-182. [Google Scholar]

[4] Anderson M., Vogles E. A. Pew Research Center; 2020. Americans turn to technology during COVID-19 outbreak, say an outage would be a problem. https://www. pewresearch. org/fact-tank/2020/03/31/americans-turnto- technology-during-covid-19-outbreak-say-an-outage-would-be-aproblem/ [Google Scholar]

[5] Arai Y. C., Ueda W., Ushida T., Kandatsu N., Ito H., Komatsu T. Increased heart rate variability correlation between mother and child immediately preoperation. Acta Anaesthesiol. Scand.2009; 53 (5): 607-610. [PubMed] [Google Scholar]

[6] Auvinen A., Feychting M., Ahlbom A., Hillert L., Elliott P., Schüz J., Vermeulen R. Headache, tinnitus and hearing loss in the international cohort study of mobile phone use and health (COSMOS) in Sweden and Finland. Int. J. Epidemiol.2019; 48 (5): 1567-1579. [PMC free article] [PubMed] [Google Scholar]

[7] Ayres-de-Campos D., Spong C. Y., Chandraharan E. FIGO consensus guidelines on intrapartum fetal monitoring: Cardiotocography. Int. J. Gynecol. Obstet.2015; 131 (1): 13-24. [PubMed] [Google Scholar] 77

[8] Baby N. M., Koshy G., Mathew A. The effect of electromagnetic radiation due to mobile phone use on thyroid function in medical students studying in a medical college in South India. Indian J. Endocrinol. Metabol.2017; 21 (6): 797. [PMC free article] [PubMed] [Google Scholar]

[9] Bauer J., Gorecki I., Kohyt M., Migasiewicz A., Podbielska H. The influence of smartphones' operation modes on the superficial temperature distribution in the human auricle region. J. Therm. Anal. Calorim.2018; 133 (1): 559-569. [Google Scholar]

[10] Baykan P., Ünal E. S. Measurement of electromagnetic radiation emitted by DECT phones used in office environments and evaluation of the results in terms of occupational health and safety. East. Anatolian J. Sci.2019; 5 (1): 7-22. [Google Scholar]

[11] Birks L., Guxens M., Papadopoulou E., Alexander J., Ballester F., Estarlich M. …Kheifets L. Maternal cell phone use during pregnancy and child behavioral problems in five birth cohorts. Environ. Int.2017; 104: 122-131. [PMC free article] [PubMed] [Google Scholar]

[12] Dang D., Dearholt S. Sigma Theta Tau International; 2018. Supplemental Materials for Johns Hopkins Nursing Evidence-Based Practice: Model and Guidelines. [Google Scholar]

[13] Ekici B., Tanındı A., Ekici G., Diker E. The effects of

the duration of mobile phone use on heart rate variability parameters in healthy subjects. Anatol. J. Cardiol.2016; 16 (11): 833. [PMC free article] [PubMed] [Google Scholar]
[14] Elsayed N. M., Jastaniah S. D. Mobile phone use and risk of thyroid gland lesions detected by ultrasonography. Open J. Radiol.2016; 6 (2): 140. [Google Scholar]
[15] Heo J. Y., Kim K., Fava M., Mischoulon D., Papakostas G. I., Kim M. J. …Jeon H. J. Effects of smartphone use with and without blue light at night in healthy adults: a randomized, double-blind, cross-over, placebo-controlled comparison. J. Psychiatr. Res.2017; 87: 61-70. [PubMed] [Google Scholar]
[16] International Commission on Non-Ionizing Radiation Protection.2019. Guidelines for Limiting Exposure to Electromagnetic Field (100 kHz to 300 78 GHz) https://www. icnirp. org/cms/upload/publications/ICNIRPrfgdl2020. pdf [Google Scholar]
[17] Isabona J., Srivastava V. M. Cellular mobile phone—a technical assessment on electromagnetic radiation intensity on human safety. IEEE; 2017. pp.271-274. [Google Scholar]
[18] Jarczok M. N., Koenig J., Wittling A., Fischer J. E., Thayer J. F. First evaluation of an index of low vagally-mediated heart rate variability as a marker of health risks in human adults: proof of concept. J. Clin. Med.2019; 8 (11): 1940. [PMC free article] [PubMed] [Google Scholar]
[19] Jung S. I., et al. The effect of smartphone usage time on posture and respiratory function. J. Phys. Therapy Sci.2016; 28 (1): 186-189. [PMC free article] [PubMed] [Google Scholar]
[20] Karuserci Ö. K., Çöl N., Demirel C. May electromagnetic field exposure during pregnancy have a negative effect on anthropometric measurements of the newborn? Cukurova Med. J.2019; 44 (1): 290-295. [Google Scholar]
[21] Li D. K., Chen H., Ferber J. R., Odouli R., Quesenberry C. Exposure to magnetic field non-ionizing radiation and the risk of miscarriage: a prospective cohort study. Sci. Rep.2017; 7 (1): 1-7. [PMC free article] [PubMed] [Google Scholar]
[22] Lu X., Oda M., Ohba T., Mitsubuchi H., Masuda S., Katoh T. Association of excessive mobile phone use during pregnancy with birth weight: an adjunct study in Kumamoto of Japan Environment and Children's Study. Environ. Health Prev. Med.2017; 22 (1): 52. [PMC free article] [PubMed] [Google Scholar]
[23] National Institute of Health (NIH) 2021. Study Quality Assessment Tool. https://www.nhlbi.nih.gov/health-topics/study-quality-assessmenttools [Google Scholar]
[24] Page M. J., McKenzie J. E., Bossuyt P. M., Boutron I., Hoffmann T. C., Mulrow C. D. …Moher D. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ.2021; 372 [PMC free article] [PubMed] [Google Scholar] 79
[25] Park J. The effects of heavy smartphone use on the cervical angle, pain threshold of neck muscles and depression. Adv. Sci. Technol. Lett.2015 [Google Scholar]
[26] Qasim T., Obeidat M., Al-Sharairi S. The effect of smartphones on human health relative to user's addiction: a study on a wide range of audiences in Jordan. Int. J. Med. Health Sci.2017; 11 (5): 300-303. Rubik, B. (2017) [Google Scholar]
[27] ROB-2.2021. RoB 2 Tool A Revised Tool to Assess the Risk of Bias in Randomized Trials. https://sites. google. com/site/riskofbiastool/welcome/rob-2-0-tool/current-version-of-rob-2 [Google Scholar]
[28] ROBINS-I tool.2021. Current Version of Robins1. https://sites.google.com/site/riskofbiastool/welcome/home/current-versionof-robins-i [Google Scholar]
[29] Rubik B. Effects of a passive online software application on heart rate variability and autonomic nervous system balance. J. Alternative Compl. Med.2017; 23 (1): 68-74. [PMC free article] [PubMed] [Google Scholar]
[30] Saadia Z. Impact of maternal obesity and mobile phone use on fetal cardiotocography pattern. Open Access Macedonian J. Med. Sci.2018; 6 (10): 1813. [PMC free article] [PubMed] [Google Scholar]
[31] Schneider K., Schwarz M., Burkholder I., Kopp-Schneider A., Edler L., Kinsner-Ovaskainen A. …Hoffmann S. "ToxRTool", a new tool to assess the reliability of toxicological data. Toxicol. Lett.2009; 189 (2): 138-144. [PubMed] [Google Scholar]
[32] Schneider U., Bode F., Schmidt A., Nowack S., Rudolph A., Doelcker E. M. …Hoyer
[33] D. Developmental milestones of the autonomic nervous system revealed via longitudinal monitoring of fetal heart rate variability. PLoS One.2018; 13 (7) [PMC free article] [PubMed] [Google Scholar]
[34] Shrestha A., Tripathi P., Dongol A. Pregnancy outcomes in patients with hypothyroidism. Kathmandu Univ. Med. J.2019; 65 (1): 57-60. [PubMed] [Google Scholar] 80
[35] Takei R., Nagaoka T., Nishino K., Saito K., Watanabe S., Takahashi M. Specific absorption rate and temperature increase in pregnant women at 13, 18, and 26 weeks of gestation due to electromagnetic wave radiation from a smartphone. IEICE Commun. Express.2018; 7 (6): 212-217. [Google Scholar]
[36] Tsarna E., Reedijk M., Birks L. E., Guxens M., Ballester F., Ha M. …Olsen J. Associations of maternal cell phone use during pregnancy with pregnancy duration and fetal growth in 4 birth cohorts. Am. J. Epidemiol.2019; 188 (7): 1270-1280. [PMC free article] [PubMed] [Google Scholar]
[37] https://www.who.int/docs/default-source/coronaviruse/covid-strategy-update14april2020.pdf, World Health Organization. 2020.
[38] Yüksel M., Nazıroğlu M., Özkaya M. O. Long-term exposure to electromagnetic radiation from mobile phones and Wi-Fi devices decreases plasma prolactin, progesterone, and estrogen levels but increases uterine oxidative stress in pregnant rats and their offspring. Endocrine.2016; 52 (2): 352-362. [PubMed] [Google Scholar]
[39] Zarei S., Vahab M., S. M. Mother's exposure to electromagnetic fields before and during pregnancy is associated with the risk of speech problems in offspring. J. Biomed. Phys. Eng.2019; 9 (1): 61. [PMC free article] [PubMed] [Google Scholar