

Efforts To Reduce Maternal, Infant, And Under-Five Mortality In Semarang Regency

Endang Nur Widiyaningsih , Siti Zulaekah, Dhian Sukma Aprilliani, Syafiq Rifda Seftyarini

Department of Nutrition, Universitas Muhammadiyah Surakarta, Indonesia

 enw239@ums.ac.id

Abstract

In 2019, the poverty rate in Semarang Regency declined to 7.04%, down from 7.29% in 2018. Nevertheless, the number of maternal, infant, and under-five deaths in the region increased in 2020 compared to the previous year. Despite numerous interventions that have been implemented, mortality rates among mothers, infants, and young children remain considerably high. This condition is primarily attributed to the inadequate number of healthcare professionals in proportion to the population that must be served across an extensive geographical area. In light of this analysis, the present community engagement initiative seeks to contribute constructively through the development of nutrition education media aimed at promoting nutritional awareness and preventing early maternal, infant, and child mortality. The educational media will be designed to be engaging and culturally appropriate, aligning with the characteristics of the local population in Semarang Regency. Furthermore, this initiative also aims to develop a variety of supplementary feeding (PMT) menus to serve as a reference for improving the nutritional intake of pregnant women and those experiencing Chronic Energy Deficiency (CED).

Keywords: *child_mortality; infant_mortality; maternal_mortality; nutrition_education_media*

1. Introduction

Semarang Regency is an area that has the status of an autonomous district in Central Java Province, which has a geographical location at 110° 14' 54.75" - 110° 39' 3" East Longitude and 7° 3' 57" - 7° 30' 0". Semarang Regency has an area of 95,020,674 hectares, or about 2.92% of the area of Central Java Province. Administratively, the Semarang Regency area consists of 19 sub-districts consisting of 208 villages and 27 sub-districts. Geographically, Semarang Regency benefits from its position in the connecting triangles of the central development of the Yogyakarta, Solo, and Semarang (Joglosemar) regions. This strategic position can be a strength that is used as capital for regional development.

In 2019, the poverty rate in Semarang Regency decreased by 7.04% compared to 7.29% in 2018. The poor also decreased from 75,670 people in 2018 to 73,900 people in 2019 [1]. However, data at the Semarang Regency Health Office shows that the maternal mortality rate (AKI), infant mortality rate (AKB), and infant mortality rate (AKABA) are increasing. The number of deaths of pregnant/childbirth/postpartum women in 2020 was 25 cases, an increase of 15 cases compared to 2019, which was only 10 cases. There were 3 biggest causes of maternal death in 2020, namely bleeding with 8 cases, preeclampsia/eclampsia with 5 cases, and Covid-19 with 4 cases [2].

The prevalence of Maternal Mortality Rate (AKI) in Central Java in general and Semarang Regency in particular in 2018 occurred due to the increasing number of high-risk pregnancies, low early detection in the community, and lack of speed and accuracy in

decision-making for high-risk pregnancy referrals. [3]. In 2020, the number of deaths of infants aged 0-11 months was 120 cases compared to 105 cases in 2019. There are 3 causes of death for babies aged 0-11 months in Semarang Regency, namely BBLR, asphyxia, and congenital disorders. Infant mortality can be largely influenced by neonatal deaths. Causes of neonatal death include infection (pneumonia, tetanus, diarrhea), prematurity or BBLR, and congenital abnormalities. In addition to maternal and infant mortality, the number of deaths of toddlers aged 0-5 years in 2020 was 130 cases higher when compared to 116 cases in 2019. The number of deaths of toddlers aged 0-5 years consists of 120 cases of infant deaths aged 0-11 months and 10 cases of deaths of children under five aged 12-59 months. The largest cause of death for children under five years old aged 12-59 months in 2020 was ileus and congenital disorders.

Various efforts have been made by the government, especially the Semarang Regency Health Office. These efforts include registering health centers to the National Integrated Referral Information System so that health centers can access referrals to type A hospitals, strengthening networks with referral hospitals, increasing the capacity of health workers in handling maternal and neonatal emergencies, optimizing maternal neonatal referrals in the pandemic era, including mothers with Covid-19, and optimizing the PONEK referral system, including access to SPOG, the Safe Baby Mother network through the WA gateway, and the Birth Waiting House (RTK), which is integrated with the WA gateway. In addition, coordination efforts are also made with the Comprehensive Emergency Neonatal Obstetrics Service Team (PONEK) at the hospital related to referrals for handling neonatal and infant emergencies, referrals as early as possible in cases where there are indications of emergencies in neonates and babies, neonatal emergency services *on call* involving pediatricians and teams, neonatal emergency orientation, socialization of peer counselors to prepare prospective mothers, and Supplementary Feeding (PMT) for pregnant women with chronic energy deficiencies (KEK). Although various efforts have been carried out, the mortality rate of mothers, infants, and toddlers is still high. This happens because the number of health workers is not proportional to the number of people who must be served in a very large area.

In order to strengthen programs or efforts to prevent maternal, infant, and toddler deaths in Semarang Regency, the academic community of the UMS Nutrition Study Program, as a health education institution, is trying to contribute to the implementation of programs that will be implemented by the Semarang DKK. The intended contribution is to strive for the availability of nutrition education media that can be used as a tool to disseminate information to the public. This is done because the main factors that affect the increase in maternal and infant mortality rates in Indonesia are limited medical personnel, inadequate transportation, and low maternal accessibility to health and maternal knowledge [4].

Based on the above analysis, this community service activity aims to contribute ideas in the form of developing nutrition education media as nutrition promotion materials to prevent early deaths of mothers, infants, and toddlers. The media developed is interesting and in accordance with the character of the community in the Semarang Regency area. In addition, this service also aims to develop the Supplementary Feeding (PMT) menu as a reference for variations of the PMT menu for pregnant women and mothers who experience SEZs.

2. Method

2.1 Solutions

Based on the analysis of problems and problems faced by partners, several media preparation activities were carried out to increase knowledge for pregnant women, lactating mothers, and young women as prospective mothers. The purpose of creating this media, in addition to improving attitudes and knowledge, is to improve the mother's skills to make

1. Compiling nutrition education media in the form of balanced nutrition return sheets for pregnant women as material to provide counseling for nutritionists at the Health Center to the people of Semarang Regency, especially pregnant women.
2. Compiling nutrition education media in the form of videos to prevent anemia as nutrition education materials carried out by nutritionists at the Health Center to the people of Semarang Regency, especially young women and brides-to-be
3. Compiling nutrition education media in the form of videos on monitoring the growth and development of infants and toddlers as nutrition education materials by nutritionists to the community, especially for breastfeeding mothers and mothers under five.
4. Compile and develop a booklet containing recipes or PMT menus for pregnant women and mothers who experience chronic energy loss. The results of the development of this menu can be used as a guideline for the provision of PMT for pregnant women and mothers who experience SEZs at Posyandu and Puskesmas.

2.2 Targets and Outputs

The target of this service activity is to be able to create educational media in the form of a flip sheet with the theme "**Healthy pregnant women with balanced nutrition,**" an educational video "**Prevent anemia,**" and a video "**Monitoring the Growth and Development of Babies and Toddlers,**" as well as a booklet "**Supplementary Food Recipes for Pregnant Women and Mothers who experience SEZs.**" This educational media will be used by the Semarang Regency Office for educational purposes for the community. The output of this service is in the form of IPR, educational media, and publication articles.

3. Results and Discussion

3.1 Survey stage

This service activity is an activity between the Nutrition Science Study Program, in this case lecturers and students in collaboration with the Semarang Regency Health Office, in this case Sie Kesga and Nutrition. The development of educational media is carried out through several stages. The stages are

1. The preliminary survey stage of potentials and problems: this stage is carried out by analyzing secondary data on nutritional problems that occur in the Semarang Regency area. Based on existing data, it is known that the prevalence of stunting in Semarang Regency in 2020 is 5.31%. The Ministry of Health targets the stunting rate to decrease from 27.7% to 14% in the RPJMN from 2020 to 2024 [5]. This activity was carried out through online discussions with *Zoom meetings*.

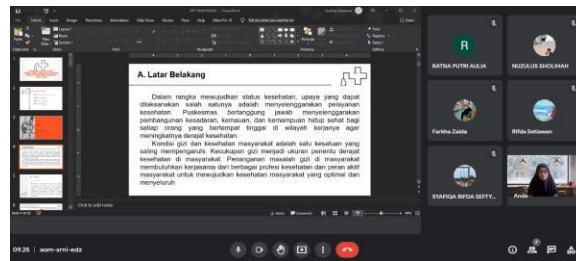


Figure 1. Zoom Meeting Analyst Potential and Problem

2. The next stage is the collection of information needs, which is the basis for the development of nutrition education media to produce effective media. The analysis of information needs was carried out by discussing between the Nutrition Division of the Semarang Regency Health Office, UMS Nutrition Lecturers, and students and conducting literature studies to obtain the needed information. The activity was carried out in two methods, both offline at the Semarang Regency Health Office and online by involving all service teams through *Zoom meetings*.



Figure 2. Discussion activities

The following are the results of the collection of information needs:

- a. Efforts to prevent stunting must be carried out early so that women of childbearing age who will prepare for pregnancy so that the first 1000 days of life (HPK) of the child can be well prepared. Maternal knowledge indirectly affects the health status of the mother, the fetus conceived, and the baby to be born [6]. These results are the basis that the target of nutrition education as an effort to prevent stunting is women of childbearing age as early prevention.
- b. Nutritional fulfillment during pregnancy is very important; balanced nutrition for pregnant women can reduce health risks to the fetus and mother. Maintaining nutritional balance in pregnant women is very necessary by providing food that contains enough carbohydrates and fats as a source of energy. protein as a source of protein-building substances as well as iron, calcium, vitamins, folic acid, and energy [7]. These results are the basis for determining the targets, namely pregnant women and the balanced nutritional material for pregnant women that will be delivered.
- c. Research [8] with the title "Training on Measuring Nutritional Status of Toddlers as an Effort to Prevent Stunting from an Early Age in Mothers in Randugunting Hamlet, Sleman, DIY," regarding the provision of nutrition education regarding the description of nutritional problems in Indonesia, the definition of stunting, the causes of stunting, the impact of stunting, stunting prevention, and how to measure the nutritional status of toddlers. The research is the basis for completing the material that will be delivered in the media.
- d. One way that can be used to increase knowledge about the fulfillment of balanced

nutrition, especially in the period of the first 1000 days of life, is to provide health education. Health education is provided using interesting media to be more effective. [9]. These results show that nutrition education can be carried out using media with an attractive design; the media becomes a tool in promoting health messages.

After analyzing potential problems and analyzing information needs, the next step is to create a product design by determining the content of the material and media design scenarios that can make the media creation process easier. The creation of flip media, booklets, and videos was carried out by students by discussing with the Nutrition Division of the Semarang Regency Health Office and UMS Nutrition Lecturers. The media produced is in the form of flippages, booklets, and *role-play videos*.

3.2 Media Development Stage

After the two stages are implemented, the next stage is media development. The following are the results of creating nutrition education media as an effort to prevent stunting:

a. Media Flip "Healthy Pregnant Women with Balanced Nutrition"



Figure 3. Media Flip

This flip sheet media initially consisted of four pages and then condensed into three pages with the aim of making it easier for pregnant women to remember the material provided. If there are too many pages, it will make it difficult for pregnant women to remember because the flip media is not a medium that can be taken home as a reminder.

b. Video nutrition education media "Prevent Anemia"

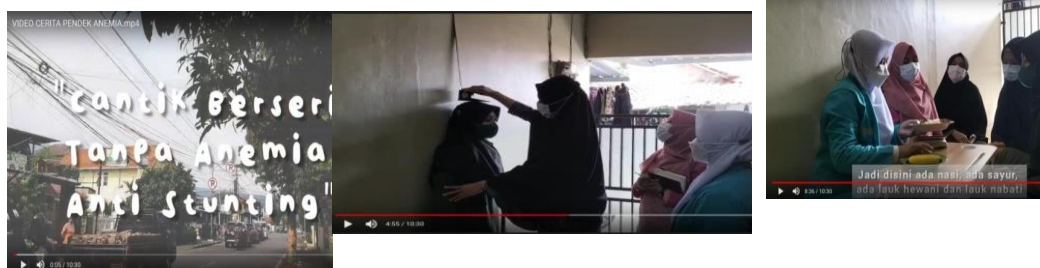


Figure 4. Media Flip

This anemia prevention video media is intended for adolescent girls and pregnant women. In the Semarang Regency area, there are still quite a lot of anemia problems in adolescent girls and pregnant women. Young women tend to be more interested in watching videos than if they are just flip-flops or leaflets.

c. Nutrition education media video "Monitoring the Growth and Development of Infants and Toddlers"

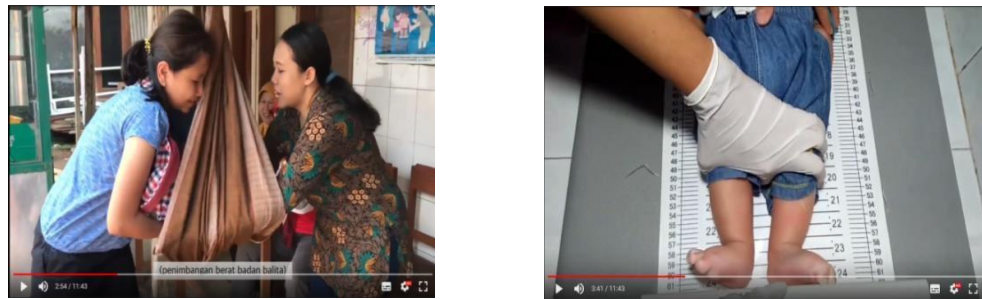


Figure 5. Nutrition education video

Video media monitoring the growth and development of infants and toddlers is aimed at mothers who have toddlers. This video contains the process of measuring the length or height of toddlers to show mothers of toddlers that anthropometric measurements of toddlers every month are very important as early detection of stunting in toddlers.

d. Booklet "Supplementary Food Recipes for Pregnant Women and Mothers Experiencing KEK"

In addition to the three media above, this activity also produced a booklet containing a collection of 6 food recipes that can be applied to PMT for pregnant women which are equipped with nutritional value. The booklet contains several recipes, namely grit, snapper rice, macaroni schotel, stup roti es teler, bitterballen and tofu egg roll. An example of one of the pages in the Booklet is as follows:

DINAS KESEHATAN KABUPATEN
 SEMARANG BERSAMA SAMA DENGAN
 MAHASISWA PROGRAM STUDI GIZI
 FAKULTAS ILMU KESEHATAN UNIVERSITAS
 MUHAMMADIYAH SURABAYA



Bubur jagung

Cr : bebeclub.com

BAHAN :

- 100 gr jagung manis, pipil
- 50 gr nasi putih pulen
- 1 butir telur ayam
- 20 gr gula pasir
- 1/3 sdt garam halus
- 3 sdm santan kental instan
- 10 gr tepung maizena
- 300 ml air matang

LANGKAH :

1. Pipil jagung, lalu blender halus (atau setengah kasar, sesuaikan dgn tekstur anak)
2. Masukkan jagung halus, nasi putih, dan air ke dalam panci. Masak hingga mendidih dan jagung matang
3. Kocok lepas telur, campurkan ke dalam panci. Aduk aduk rata hingga telur matang. Lalu masukkan gula pasir, garam, dan santan. Aduk lagi
4. Larutkan 1 sdm tepung maizena dgn 3 sdm air. Aduk lalu masukkan ke dalam panci. Aduk-aduk hingga mulai menggumpal. Biarkan mendidih beberapa saat. Cek rasa. Matikan kompor.
5. Tunggu tidak terlalu panas, ambil secukupnya
6. Hidangkan.

KANDUNGAN GIZI

- Energi : 357,8 kkal
- Protein : 11,2 gr
- Lemak : 8,7 gr
- Karbohidrat : 57,5

Figure 6. Booklet

In general, the activities went smoothly; all planned programs could be carried out well. The media produced can be used as a tool in counseling programs for adolescent girls, brides-to-be, and pregnant women in the community in Semarang.

Conclusion

In general, the activities went smoothly; all planned programs could be carried out well. The media produced can be used as a tool in counseling programs for adolescent girls, brides-to-be, and pregnant women in the community in the Semarang Regency Area.

Reference

- [1] BPS, “Perkembangan Angka Kematian Bayi (AKB), Angka Kematian Balita (AKBA) dan Angka Kematian Ibu (AKI) di Kabupaten Semarang, 2017-2022,” Badan Pusat Statistik. Accessed: May 22, 2025. [Online]. Available: <https://semarangkab.bps.go.id/id/statistics-table/1/MzgZlZE=/perkembangan-angka-kematian-bayi--akb---angka-kematian-balita--akba--dan-angka-kematian-ibu--aki--di-kabupaten-semarang--2017-2022.html>
- [2] Dinkes, “Profil Kesehatan Dinas Kesehatan Kabupaten Semarang),” 2020, *Dinas Kesehatan Kabupaten Semarang, Semarang*.
- [3] Dinkes, “Rencana Strategis Dinas Kesehatan Provinsi Jawa Tengah Tahun 2018-2023,” 2019, *Dinas Kesehatan Kabupaten Semarang, Semarang*.
- [4] D. Retnaningsih, R. Winarti, P. Wulandari, N. Nika, and R. Riska, “PENINGKATAN DERAJAT KESEHATAN MASYARAKAT MELALUI PERAN KADER,” *Community Dev. J. J. Pengabd. Masy.*, vol. 2, no. 3 SE-Articles, pp. 889–895, Nov. 2021, doi: 10.31004/cdj.v2i3.2673.
- [5] Bappenas, “Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2020-2024,” Jakarta, 2020.
- [6] N. Fauziatin, “Pengaruh Pendidikan Kesehatan dengan Media Lembar Balik Tentang Pencegahan Stunting Pada Calon Pengantin,” *VISI KES J. Kesehat. Masy.*, vol. 18, no. 2, 2019, doi: <https://doi.org/10.33633/visikes.v18i2.2679>.
- [7] I. G. Pratiwi, “EDUKASI TENTANG GIZI SEIMBANG UNTUK IBU HAMIL DALAM PENCEGAHAN DINI STUNTING,” *J. Pengabd. Masy. Sasambo*, vol. 1, no. 2 SE-Articles, pp. 62–69, Apr. 2020, doi: 10.32807/jpms.v1i2.476.
- [8] K. Isni and S. M. Dinni, “PELATIHAN PENGUKURAN STATUS GIZI BALITA SEBAGAI UPAYA PENCEGAHAN STUNTING SEJAK DINI PADA IBU DI DUSUN RANDUGUNTING, SLEMAN, DIY,” *Panrita Abdi - J. Pengabd. pada Masy.*, vol. 4, no. 1 SE-Articles, pp. 60–68, Jan. 2020, doi: 10.20956/pa.v4i1.7299.
- [9] D. Nurlaela, P. Sari, N. Martini, M. Wijaya, and R. T. Dewi, “Efektivitas Pendidikan Kesehatan Melalui Media Kartu Cinta Anak Tentang 1000 Hari Pertama Kehidupan dalam Meningkatkan Pengetahuan Pasangan Calon Pengantin di KUA Kecamatan Jatinangor,” *Jkesvo (Jurnal Kesehat. Vokasional)*, vol. 3, no. 2, pp. 62–68, 2018.