

MAPPING SYSTEM FOR LOCATION OF STUNTING CASES IN TODDLER IN TANJUNG BALAI CITY USING WEBGIS

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Abstract: Data on stunting cases among toddlers in Datuk Bandar Timur sub-district, Tanjung Balai city Not yet processed in a way computerized use digital map , so that the monitoring process in-depth investigation of the distribution and patterns of stunting in a area Not yet presented with Good . This matter Of course impact on cadre Public health center Semula Jadi For monitor number nutrition bad And spread prevalence of stunting in Datuk Bandar Timur sub-district, Tanjung Balai city . For That need development A system internal data management form chart nor map that can be give description spread nutrition bad in the region Mayor. Planning And development system information This done with use method data collection and interview direct to the UPTD Community Health Center Semula Jadi . Objective it was built this *webgis* can assist in identifying areas that need nutritional intervention, mapping the prevalence of stunting and malnutrition, as well as monitoring nutrition programs and optimizing resource allocation. Results from GIS can plays an important role in supporting efforts to prevent and overcome stunting problems by providing tools effective *software for collecting, analyzing and visualizing nutritional data spatially*. The use of web GIS can also provide information on stunting locations from UPTD Semula Jadi Health Center data.

Keywords : geographic information system; location mapping system; stunting.

Abstrak: Data kasus stunting pada balita di kecamatan datuk bandar timur kota tanjung balai belum diproses secara terkomputerisasi menggunakan peta digital, sehingga proses pemantauan penyelidikan mendalam tentang sebaran dan pola stunting disuatu daerah belum tersajikan dengan baik. Hal ini tentu berdampak pada kader puskesmas Semula Jadi untuk memantau angka gizi buruk dan penyebaran prevalensi stunting di kecamatan datuk bandar timur kota tanjung balai. untuk itu perlu pembangunan sebuah sistem pengelolaan data dalam bentuk grafik maupun peta yang dapat memberikan gambaran penyebaran gizi buruk diwilayah Datuk Bandar. Perancangan dan pembangunan sistem informasi ini dilakukan dengan menggunakan metode pengambilan data dan wawancara langsung ke UPTD Puskesmas Semula Jadi. Tujuan dibangunnya *webgis* ini dapat membantu dalam identifikasi daerah yang membutuhkan intervensi gizi, pemetaan prevalensi stunting dan gizi buruk, serta memantau program-program gizi dan optimalisasi alokasi sumber daya. Hasil dari SIG dapat berperan penting dalam mendukung upaya pencegahan dan penanggulangan masalah stunting dengan menyediakan alat *software* yang efektif untuk pengumpulan, analisis, dan visualisasi data gizi secara spasial. Kegunaan webgis juga dapat memberikan informasi mengenai lokasi stunting dari data UPTD Puskesmas Semula Jadi.

Kata kunci: sistem informasi geografis; sistem pemetaan lokasi; stunting

INTRODUCTION

Stunting and malnutrition are two different nutritional problems, but are often related to each other. Stunting is a chronic nutritional problem caused by a lack of nutritional intake over a long period of time [1]. Malnutrition is a nutritional problem that occurs in a short time, caused by a lack of nutritional intake in a relatively short time. *Z score* body weight for age (WW/U) is used to measure nutritional status, whether malnutrition or stunting [2].

Malnutrition is considered to need to be addressed because it has fatal consequences for the next stage of life and often causes death in children [3]. Stunting and malnutrition have different symptoms. Symptoms of stunting include slowed body growth, a body that is shorter than peers of the same age, and a face that looks younger. Symptoms of malnutrition include dry skin, reduced fat under the skin, and muscle wasting [4].

Mapping spread stunting cases in the sub-district East mayor of Tanjung City Hall Not yet use digital map, so difficult for party the desired community health center down spaciousness And feel need a long time for search for report data stunting cases. Moment This information obtained Still use report print in form paper. This matter make information provided not enough accurate as well as No exists possible mapping monitoring effort prevention spread case stunting at each ward through *website*. Tanjung Balai City area Alone has 6 sub-districts and 31 sub-districts. On 2020-2023 on subdistrict eastern mayor there were 18 toddlers identified caught stunting cases from 5 sub-districts, Images the experience enhancement from three year previously. In facing these challenges, Geographic Information Systems (GIS)

have become a very useful tool. GIS allows in-depth investigation of the distribution and patterns of stunting by integrating geographic data with stunting data from various sources [5].

Geographic Information Systems (GIS) are computer systems used to enter, store, check, integrate, manipulate and describe geographic-related data quickly and accurately [6]. GIS can be used in the health sector to address dissemination of nutritional problems by efficiently connecting data from various sources and depicting it in a visual form that is directly linked to geographic maps [7],[8]. GIS itself can assist in identifying areas that need nutritional intervention, mapping the prevalence of stunting and malnutrition, as well as monitoring nutrition programs and optimizing resource allocation[9]. GIS can plays an important role in supporting efforts to prevent and overcome stunting problems by providing tools effective[10]. In making A device soft based *website* that uses System Information Geographic (GIS) for identify location of stunting from UPTD Puskesmas data Semula Jadi.

Study previously done by Ade in 2020, with title “Design Get up System Information Geographical Mapping Deployment Stunting Disease in Malang Regency” Research the using a prototype model that can help Service Health Malang Regency for displays information spread of stunting in Malang Regency. The resulting system can serve information route or track going to stunting sufferers in Malang Regency based on region subdistrict And village [11]. Furthermore on in 2023, Siti do research entitled "Utilization System Information Geographical Deep Web Based Stunting Cases Using the Laravel Framework" with implementation a webGIS platform happen change significant in matter ac-

cessibility And managing stunting data with more efficient possible user with easy see distribution stunting cases in each his village in form maps, tables, etc graphics, Society Also can count estimated nutritional status child, so they get information related to nutritional status child in a way independently [12].

Stunting Case Mapping System using WebGIS aim as a solution for public And Public health center in monitor And handling case stunting as well as innovative and efficient in overcoming the challenges of mapping stunting cases in Tanjung Balai City Area. By utilizing geographic information technology (GIS) and *web-based*, this system allows the collection, analysis and visualization of stunting data in *real-time*, in the form of data in form color as a sign that gives information about safe situation or necessary circumstances handling more carry on in map region For map number nutrition bad on each sub-district so it makes it easier the UPTD Puskesmas Semula Jadi to quickly respond, which is expected to be achieved to reduce stunting rates and improve the overall welfare of children. System This designed with Language PHP, CSS, JavaScript, and programming using a MySQL database that has a number of excess only requires internet and *browsers* For accessible, as well possible user For access information in a way *on line* from anywhere And any time.

METHOD

Method used on study This apply *Waterfall* Model in development device soft [13]. Method This chosen because structured steps with clear sequence, of stage analysis need until maintenance. Draft sequential linear approximation

where every phase must resolved before phase next started. Every stages own sort of mutual derivatives influential. As for description from stages the can seen on Image 1.

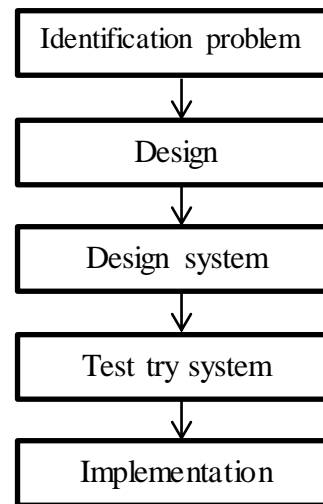


Image 1. Stages Study

Identification problem

Become the first step in the research process, which provides explanation about problems encountered form how difficult it is in access, analyze, and displays data on stunting cases at UPTD Puskesmas Semula Jadi.

Design

In this stage, design device programming soft covers data structures, architecture device soft, representation interface and procedure coding.

Design system

Build system mapping stunting cases with use webGIS. The design of this system will use the PHP programming language and MySQL database. The actors in using this system are admin/officers, postal cadres and the community. Objective from design system This is For provide tool that will help in mapping stunting cases.

and make it ready for operation. Interface implementation is an important part of a program that displays a display built in the form of a *web page* .

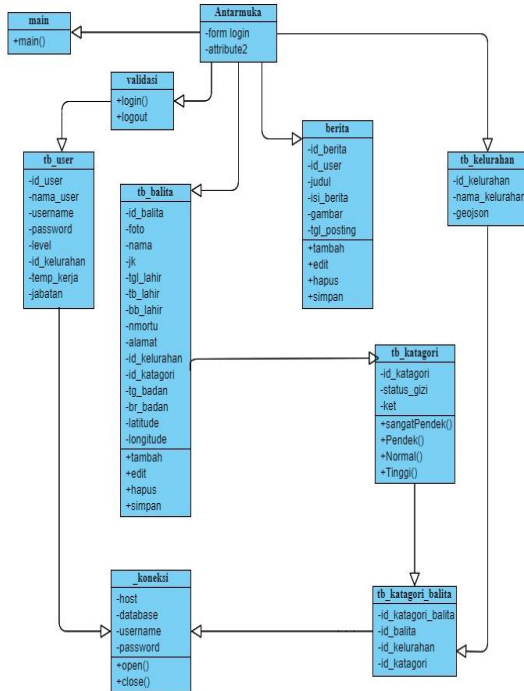


Image 3. Class Diagrams

The next on Image 4, is page main moment open A which application there are menus in it . For can use *user* must *login* moreover formerly . Appearance Page News is appearance For society can see news activity What just do it by party Public health center Semula Jadi .

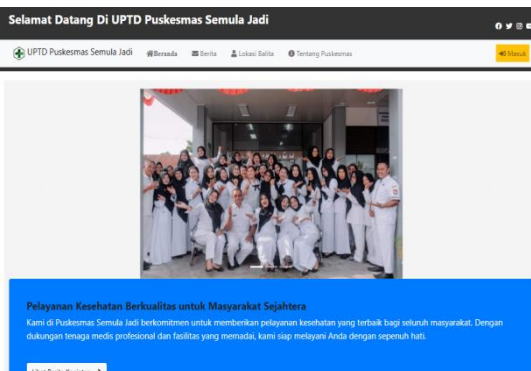


Image 4. Appearance Page Main

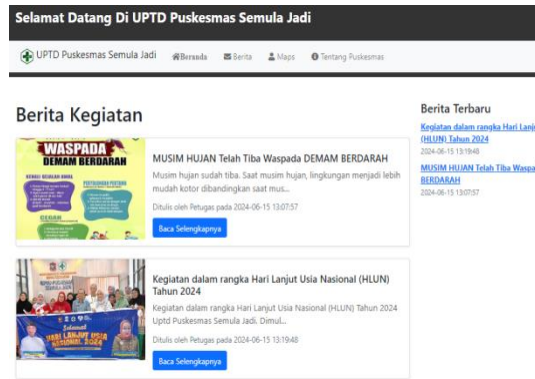


Image 5. Appearance Page News

Appearance Page Maps is display displays point location about toddler as well as can look for Name affected toddlers stunting cases .

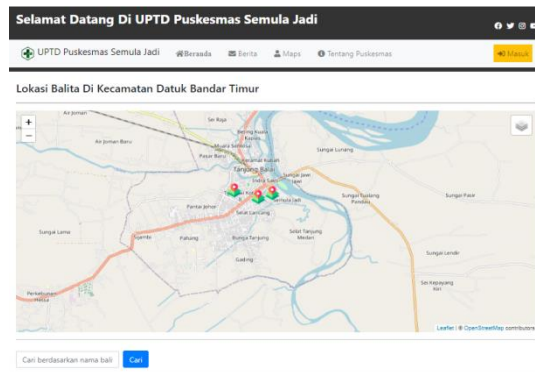


Image 6. Appearance Maps page

The Mapping Page Display is a display where officers display a map page of the level of distribution of stunting cases in each sub-district in Datuk Bandar Timur sub-district.

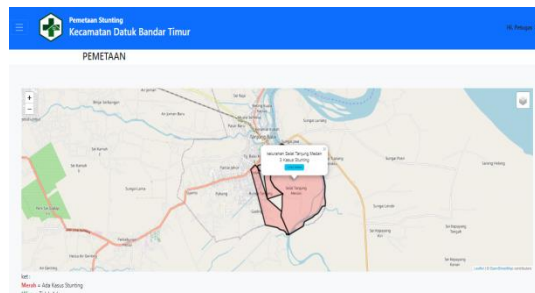


Image 7. Page Mapping

The View Details page display is a

display where officers display the names of toddlers who are affected by stunting cases in one of the sub-districts

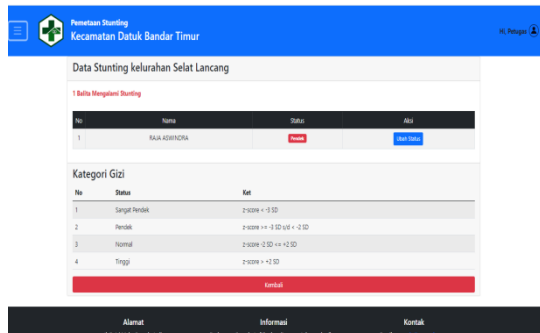


Image 8. Page View Details

Testing System

Testing system on stages This use *black box testing* , testing This is step important in development system implemented For ensure that system built works with Good And in accordance with hope. As well as as material evaluation find And repair error or problem in system so you can operate with fluent And fulfil need user .

Table 1 . Testing Black box system

| No | Function | Testing | Results | Information |
|----|---------------------|--|---|---------------|
| 1 | Page Home | see come on stage page home page which contains the Toddler Status Level | Success, Displaying Toddler Status Level. | In accordance |
| 2 | Page Mapping | See point And route location stunting sufferers | Displaying page map which contains the Spread Rate Stunting cases in every region | In accordance |
| 3 | Plus News | Input, edit deployment data stunting sufferers | Success, displays information | In accordance |
| 4 | Toddler Data Report | Input data on toddlers, look for data on stunting sufferers | Succeed, print data | In accordance |

CONCLUSION

Built system capable give access to user , in the form of login, data input, and regional data management affected . With exists application This data collection location on toddlers , including toddler data caught Stunting cases , become more accurate And detailed , so activity prevention Stunting cases can occur walk

with fluent And minimize error in data importing. Application This has a significant impact on the effectiveness of Stunting Case Prevention activities, because it is carried out with more mature calculations. With more mature calculations, confusion and uncertainty can be avoided in determining which locations of stunting cases in toddlers should be visited .

BIBLIOGRAPHY

- [1] R. N. Faizah, I. Ismail, and N. D. Kurniasari, "Peran Kader Posyandu dalam Penurunan Angka Stunting," *As-Syar'i J. Bimbing. Konseling Kel.*, vol. 6, no. 1, pp. 877–889, 2024, doi: <https://doi.org/10.47467/as.v6i1.5738>.
- [2] Taufikurrahman Taufikurrahman *et al.*, "Konvergensi Pencegahan Stunting Di Desa Dringu Kabupaten Probolinggo," *J. Inov. dan Pengabd. Kaa Mieera*, vol. 1, no. 1, pp. 40–57, 2023, doi: [10.60000/jipkam.v1i1.5](https://doi.org/10.60000/jipkam.v1i1.5).
- [3] A. V. V. Setyawati, A. H. Bambang, and A. K. Anam, "WebGIS Pemetaan Trend Kejadian Stunting Provinsi Jawa Tengah 2015-2017," *VISI KES J. Kesehat. Masy.*, vol. 19, no. 2, p. the, 2020.
- [4] D. Husnaniyah, D. Yulyanti, and R. Rudiansyah, "Hubungan Tingkat Pendidikan Ibu dengan Kejadian Stunting," *Indones. J. Heal. Sci.*, vol. 12, no. 1, pp. 57–64, 2020, doi: [10.32528/ijhs.v12i1.4857](https://doi.org/10.32528/ijhs.v12i1.4857).
- [5] I. Fathurrahman, M. F. Wajdi, H. Mandala Putra, and B. V. Widarina, "Sistem Informasi Geografis Pemetaan Sebaran Data Covid-19 Pada Puskesmas Kerongkong Kabupaten Lombok Timur Berbasis WebImam," *Infotek J. Inform. dan Teknol.*, vol. 5, no. 1, pp. 42–52, 2022, doi: [10.29408/jit.v5i1.4392](https://doi.org/10.29408/jit.v5i1.4392).
- [6] I. Rozak, "Analisis Dan Perancangan Sistem Informasi Geografis Pemetaan Hama Tanaman Padi," *J. Inform. dan Rekayasa Perangkat Lunak*, vol. 2, no. 3, pp. 375–381, 2021, doi: [10.33365/jatika.v2i3.1239](https://doi.org/10.33365/jatika.v2i3.1239).
- [7] A. Hendini and M. Rizky, "Sistem Informasi Geografis Pemetaan Lokasi Pelanggan Kredit Motor," *J. Inform. Kaputama*, vol. 6, no. 2, pp. 110–115, 2022, doi: [10.59697/jik.v6i2.106](https://doi.org/10.59697/jik.v6i2.106).
- [8] E. Redy Susanto, "Sistem Informasi Geografis (Gis) Tempat Wisata Di Kabupaten Tanggamus," *J. Teknol. dan Sist. Inf.*, vol. 2, no. 3, pp. 125–135, 2021, [Online]. Available: <http://jim.teknokrat.ac.id/index.php/JTISI>
- [9] A. S. Anwar, U. Puhuwato, U. Puhuwato, U. Ichsan, and S. Rappang, "SEKOLAH SMA SEDERAJAT," vol. 7, no. 1, 2022.
- [10] Shofi Romal 'Izzul 'Ula and Rinanza Zulmy Alhamri, "Sistem Informasi Geografis Pemetaan Angka Gizi Buruk di Wilayah Kediri," *J. Inform. dan Multimed.*, vol. 14, no. 2, pp. 23–28, 2023, doi: [10.33795/jim.v14i2.911](https://doi.org/10.33795/jim.v14i2.911).
- [11] Ade Saputra, Yoyok Seby Dwanoko, and Aan Jelli Priana, "Rancang Bangun Sistem Informasi Geografis Pemetaan Penyebaran Penyakit Stunting Di Kabupaten Malang," *Rainstek J. Terap. Sains dan Teknol.*, vol. 2, no. 4, pp. 260–269, 2020, doi: [10.21067/jtst.v2i4.5064](https://doi.org/10.21067/jtst.v2i4.5064).
- [12] S. A. Nazhifah, S. N. Aisha, M. Muslim, K. M. Sukiakhy, and J. Junidar, "Pemanfaatan Sistem Informasi Geografis Berbasis Web Dalam Kasus Stunting Menggunakan Framework Laravel," *J. Tekinkom (Teknik Inf. dan Komputer)*, vol. 6, no. 2, pp. 807–815, 2023, doi: [10.37600/tekinkom.v6i2.1095](https://doi.org/10.37600/tekinkom.v6i2.1095).

- [13] Y. Handrianto and B. Sanjaya, “Model Waterfall Dalam Rancang Bangun Sistem Informasi Pemesanan Produk Dan Outlet Berbasis Web,” *J. Inov. Inform.*, vol. 5, no. 2, pp. 153–160, 2020, doi: 10.51170/jii.v5i2.66.