

## DAFTAR PUSTAKA

- Afzal, Shaista, Imrana Masroor, and Madiha Beg. 2013. "Evaluation of Chronic Liver Disease : Does Ultrasound Scoring Criteria Help ?" 2013: 10–14.
- Akbar N. 2010. Fibrosis Hati – Diagnostik Non-Invasif. Dalam Sulaiman A, Loho I, Stephanie A. Pendekatan Terkini Hepatitis B dan C dalam Praktik Klinis Sehari-hari. Jakarta: Sagung Seto. 101-108
- Alempijevic T, Zec S, Nikolic V et al. 2017. Doppler ultrasonography combined with transient elastography improves the non-invasive assessment of fibrosis in patients with chronic liver disease. Med Ultrason, Vol 19, no.1, 7-15
- Bahrgava SK. 2010. Textbook of Color Doppler Imaging second edition. Jaypee brothers Medical Publishers (P) Ltd. New Delhi, India
- Barr RG, Ferraioli G, Palmeri ML, et al. 2015. Elastography Assesment of Liver Fibrosis: Society of Radiologists in Ultrasound Consensus Conference Statement. Radiology.rsna.org. Volume 276:number 3
- Böttcher, Katrin, and Massimo Pinzani. 2017. "Pathophysiology of Liver Fibrosis and the Methodological Barriers to the Development of Anti- Fibrogenic Agents." *Advanced Drug Delivery Reviews*. <http://dx.doi.org/10.1016/j.addr.2017.05.016>.
- Cancado DD, Carvalho ACP, Resende CMC. 2007. Utilization of splenic impedance indices in the evaluation of portal hypertension. *Radiol Bras*;40(3):155-159
- Castera L, Vergniol J, Foucher J, et al. Prospective comparison of transient elastography, Fibrotest, APRI, and liver biopsy for the assessment of fibrosis in chronic hepatitis C. *Gastroenterology*. 2005;128:343-50. Das SK, 2016. Bedside ultrasound of the abdomen - Part 1. Review article. DOI: 10.4103/0973-4651.194476
- Chaudhry SR, Panuganti KK. Anatomy, Abdomen and Pelvis, Spleen. 2019. <https://www.ncbi.nlm.nih.gov/books/NBK482235/>
- Cheng, Jenny Yeuk-ki, and Grace Lai-hung Wong. 2017. "Advances in the Diagnosis and Treatment of Liver Fibrosis." : 156–69.
- Choong CC, Venkatesh SK, Siew EP. 2012. Accuracy of routine clinical ultrasound for staging liver fibrosis. *Journal of Clinical Imaging Science*. 2:58

- Davoudi Y, Layegh P, Sima H, et al. 2014. Diagnostic Value of Conventional and Doppler Ultrasound Findings in Liver Fibrosis in Patients with Chronic Viral Hepatitis. *Journal of Medical Ultrasound* 23, 123-128
- Davoudi, Yasmin et al. 2015. "ScienceDirect Diagnostic Value of Conventional and Doppler Ultrasound Findings in Liver Fibrosis in Patients with Chronic Viral Hepatitis." : 10–15.
- Delmoral, Jessica Condesso. 2017. "Deep Learning Methods for Multimodal Hepatic Lesion Segmentation : Fusing Functional and Structural Medical Images Thesis Plan."
- Dietrich CF, Tuma J, Badea R. Ultrasound of the liver. European Course Book
- Easterbrook, P. J. et al. (2017) 'Diagnosis of viral hepatitis', 12(3). doi: 10.1097/COH.0000000000000370.
- El-hariri, Mona et al. 2017. "The Egyptian Journal of Radiology and Nuclear Medicine Diagnostic Value of Transient Elastography ( Fibroscan ) in the Evaluation of Liver Fibrosis in Chronic Viral Hepatitis C : Comparison to Liver Biopsy." *The Egyptian Journal of Radiology and Nuclear Medicine* 48(2): 329–37. <http://dx.doi.org/10.1016/j.ejrnmm.2017.03.026>.
- Ellis H. Anatomy of splenectomy for ruptured spleen. *HEPATOBILIARY SURGERY II*. 2010 Published by Elsevier Ltd.
- Elpek, Gülsüm Özlem. 2014. "Cellular and Molecular Mechanisms in the Pathogenesis of Liver Fibrosis : An Update." 20(23): 7260–76.
- Endo, Momoe et al. 2017. "Original Article Ultrasound Evaluation of Liver Stiffness: Accuracy of Ultrasound Imaging for the Prediction of Liver Cirrhosis as Evaluated Using a Liver Stiffness Measurement." : 27–34.
- Fahmy MI, Badran HM. Comarison of Transient Elastography to Doppler Indices in Prediction of Hepatitis C Induced Liver Fibrosis an Cirrhosis. *The Egyptian Journal of Radiology and Nuclear Medicine*. Vol 42, 111-117
- Fiellin D.A. et al. 2011. A treatment improvement protocol addressing viral hepatitis in people with substance use disorders. HHS Publication No. (SMA) 11-4656
- Franciscus A. 2011. An Overview of the Liver. HCSP. Version 1. April 2015
- Galip E, Ali D, Ulus A, et al. 1999. The Value of Ultrasonography in the Diagnosis of Early Cirrhosis. *The Turkish Journal of Gastroenterology* Volume 10, No 1. 07-10

Geleto G., et al. (2016). Mean Normal Portal Vein Diameter Using Sonography among Clients Coming to Radiology Department of Jimma University Hospital, Southwest Ethiopia. *Ethiop J Health Sci.* Vol. 26, No. 3

Gerstenmaier, J. F. and Gibson, R. N. (2014) ‘Ultrasound in chronic liver disease’, pp. 441–455. doi: 10.1007/s13244-014-0336-2.

Goyal, R., Mallick, S. R., Mahanta, M., Kedia, S., Shalimar, Dhingra, R., Sharma, H., Das, P., Datta Gupta, S., Panda, S., & Acharya, S. K. (2013). Fibroscan can avoid liver biopsy in Indian patients with chronic hepatitis B. *Journal of Gastroenterology and Hepatology (Australia)*, 28(11), 1738–1745. <https://doi.org/10.1111/jgh.12318>

Hadi, M Irfan, Mei Lina, and Fitri Kumalasari. 2018. “PREVENTIF : JURNAL KESEHATAN MASYARAKAT HbsAg SCREENING IN TEENAGERS IN SURABAYA BY USING RAPID TEST SKRINING HbsAg PADA REMAJA DI SURABAYA DENGAN MENGGUNAKAN RAPID TEST.” 1: 30–33.

Hernandez-gea, Virginia, and Scott L Friedman. 2011. “Pathogenesis of Liver Fibrosis.”

Horowitz, J. M., Venkatesh, S. K., Ehman, R. L., Jhaveri, K., Kamath, P., Ohliger, M. A., Samir, A. E., Silva, A. C., Taouli, B., Torbenson, M. S., Wells, M. L., Yeh, B., & Miller, F. H. (2017). Evaluation of hepatic fibrosis: a review from the society of abdominal radiology disease focus panel. In *Abdominal Radiology* (Vol. 42, Issue 8). <https://doi.org/10.1007/s00261-017-1211-7>

Hyun Kim, B., & Ray Kim, W. (2018). Epidemiology of Hepatitis B Virus Infection in the United States. *Clinical Liver Disease*, 12(1), 1–4. <https://doi.org/10.1002/cld.732>

Joseph T, Madhavan M, Devadas K, et al. 2011. Doppler assessment of hepatic venous waves predicting large varices in cirrhosis patients. *The Saudi Journal of Gastroenterology (online)*. Vol 17. No 1

Keddeas MW, Musa NI, Abdelhakam SM et al. Non-invasive assessment of liver fibrosis by simple Doppler ultrasound parameters. *International Journal of Recent Scientific Research*, vol. 7, issue 1,pp. 8083-8086.

Kgatle, Mankgopo M, and Mashiko Setshedi. 2016. “IMMUNOPATHOGENESIS OF HEPATITIS B VIRUS INFECTION AND RELATED COMPLICATIONS.” (May): 84–92.

- Khan, F., Shams, S., Qureshi, I. D., Israr, M., Khan, H., Sarwar, M. T., & Ilyas, M. (2011). Hepatitis B virus infection among different sex and age groups in Pakistani Punjab. *Virology Journal*, 8(1), 225. <https://doi.org/10.1186/1743-422X-8-225>
- Ledinghen VD, Vergniol J. 2008. Transient elastography (Fibroscan). Elsevier. *GastroenterolClin Bio* 32, 58-67
- Li L et al. 2017. The spleen in liver cirrhosis: revisiting an old enemy with novel targets. *J Transl Med.* 2017; 15: 111.
- Liu CH, Hsu SJ, Lin JW, et al. 2007. Noninvasive Diagnosis of Hepatic Fibrosis in Patients With Chronic Hepatitis C by Splenic Doppler Impedance Index. *Clinical Gastroenterology and Hepatology.* 5:1199-1206
- Majdsepas, A R, H Nafissi, and Hosseini Sh. 2018. “ORIGINAL RESEARCH ARTICLE ORIGINAL RESEARCH ARTICLE OPEN ACCESS BLUNT TRAUMA LIVER-CONSERVATIVE OR SURGICAL MANAGEMENT ?” 08: 18257–62.
- Mauss, Stefan et al. 2017. “Late Presentation of Chronic Viral Hepatitis for Medical Care : A Consensus Definition.” : 1–5.
- Moon KM, Kim G, Baik SK, et al. 2013. Ultrasonographic Scoring System Score Versus Liver Stiffness Measurement in Prediction of Cirrhosis. *Clinical and Molecular Hepatology.* 19:389-398
- Moon, Kyoung Min et al. 2013. “Ultrasonographic Scoring System Score versus Liver Stiff- Ness Measurement in Prediction of Cirrhosis.” : 389–98.
- Moosavy, Seyed Hamid et al. 2017. “Electronic Physician ( ISSN : 2008-5842 ).” (October): 5646–56.
- Muljono, David H. 2017. “Epidemiology of Hepatitis B and C in Republic of Indonesia.” 7(June): 55–59.
- Mulyanto. 2010. Patogenesis dan Diagnostik Hepatitis B Kronik. Dalam Sulaiman A, Loho I, Stephanie A. Pendekatan Terkini Hepatitis B dan C dalam Praktik Klinis Sehari-hari. Jakarta: Sagung Seto. 17-20
- Nafees M, Abbas G, Saqib M. 2011. Validity of Ultrasound in Diagnosis of Liver Fibrosis Resulting from Chronic Viral Hepatitis. *Pakistan Armed Forces Medical Journal.* Volume 4

Nallagangula, Krishna Sumanth, and Shashidhar Kurpad Nagaraj. 2018. “Liver Fibrosis : A Compilation on the Biomarkers Status and Their Significance during Disease Progression.” 4(Figure 1).

Nishiura T, Watanabe H, Ito M, Matsuoka Y, et al. 2005. Ultrasound evaluation of the fibrosis stage in chronic liver disease by the simultaneous use of low and high frequency probes. *Br J Radiol* 78: 189-197

Ohkoshi, S., Hirono, H., Watanabe, K., Hasegawa, K., Kamimura, K., & Yano, M. (2016). Natural regression of fibrosis in chronic hepatitis B. *World Journal of Gastroenterology*, 22(24), 5459–5466. <https://doi.org/10.3748/wjg.v22.i24.5459>

Paulsen F, Waschke J. 2011. Sobotta Atlas of Human Anatomy; Internal Organ 15th edition. Elsevier Urban&Fischer. 104-109

Perazzo, Hugo et al. 2015. “Factors That Could Impact on Liver Fibrosis Staging by Transient Elastography.” 2015.

Pinzani, Massimo. 2015. “Pathophysiology of Liver Fibrosis.” : 492–97.

Procopet, Bogdan, and Annalisa Berzigotti. 2017. “Diagnosis of Cirrhosis and Portal Hypertension : Imaging , Non-Invasive Markers of Fibrosis and Liver Biopsy.” 5(March): 79–89.

Rajbhandari, Ruma, and Raymond T Chung. 2016. “Treatment of Hepatitis B : A Concise Review.” *Nature Publishing Group* (July). <http://dx.doi.org/10.1038/ctg.2016.46>.

Rehermann, Barbara. 2015. “HHS Public Access.” 19(7): 859–68.

Ruggieri, A., Gagliardi, M. C., & Anticoli, S. (2018). Sex-dependent outcome of hepatitis B and C Viruses infections: Synergy of sex hormones and immune responses? *Frontiers in Immunology*, 9(OCT), 1–7. <https://doi.org/10.3389/fimmu.2018.02302>

S A Saeed, I Masroor, and M Baig. 2018. “Evaluation of Chronic Liver Disease : Does Ultrasound Scoring Criteria Help ?” : 1–17.

Scariot, Ana, Wornei Braga, and Marianna Brock. 2012. “Non-Invasive Assessment of Fibrosis Using Color Doppler Ultrasound in Patients with Hepatitis C Virus in the Amazon Rainforest , Brazil.” 86(25): 273–79.

Scheinfield M.H, Bilali A, Koenigsberg M. 2009. Understanding the Spectral Doppler Waveform of the Hepatic Veins in Health and disease. *Radiographics*. (online). Vol. 29

- Sharma, P. et al. (2015) ‘Role of Transient Elastography ( Fibroscan ) in Differentiating Severe Acute Hepatitis and Acute on Chronic Liver Failure’, Journal of Clinical and Experimental Hepatology. INASL, 5(4), pp. 303–309. doi: 10.1016/j.jceh.2015.09.004.
- Shen L, Li JQ, Zeng MD, et al. 2006. Correlation between Ultrasonographic and pathologic diagnosis of liver fibrosis due to chronic virus hepatitis. World J Gastroenterol; 12(8):1292-1295
- Sherif RZ. Liver Anatomy. 2014. “NIH Public Access.” 90(4): 643–53.
- Sibulesky, Lena. 2013. “Normal Liver Anatomy.” *Clinical Liver Disease* 2(SUPPL. 1): 2012–14.
- Sonhaye, Lantam, Abarchi Habibou Boube, Abdoulatif Amadou, and Bérésa Kolou. 2018. “Doppler Ultrasound of Hepatic Vessels in the Diagnosis of Cirrhosis of the Liver in Togo.” : 53–63.
- Sudhamshu K.C, Matsutani S, Maruyama H, et al. 2006. Doppler study of hepatic vein cirrhotic patients : correlation with liver dysfunction and hepatic hemodynamics. World journal of gastroenterology. (online) vol. 12 no. 36
- Wells, Michael L et al. 2016. “Imaging Findings of Congestive.” 1: 1024–37.
- Wells, Michael L et al. 2016. “Imaging Findings of Congestive.” 1: 1024–37.
- Xiao L, Xian J, Li Y, et al. 2014. Parameters associated with significant liver histological changes in patients with chronic hepatitis B. ISRN Gastroenterol:913890
- Zheng, R. Q., Wang, Q. H., Lu, M. De, Xie, S. Bin, Ren, J., Su, Z. Z., Cai, Y. K., & Yao, J. L. (2003). Liver fibrosis in chronic viral hepatitis: An ultrasonographic study. World Journal of Gastroenterology, 9(11), 2484–2489. <https://doi.org/10.3748/wjg.v9.i11.2484>
- Zytoon, AA. Et al. (2013). The prediction of liver disease status using Doppler observations of the hepatic and portal venous system compared with liver biopsy in patients with chronic hepatitis C. <http://dx.doi.org/10.2147/RRFU.S57202>

## Lampiran 1. Rekomendasi persetujuan etik

	<b>KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN UNIVERSITAS HASANUDDIN FAKULTAS KEDOKTERAN KOMITE ETIK PENELITIAN KESEHATAN RSPTN UNIVERSITAS HASANUDDIN Sekretariat : Lantai 2 Gedung Laboratorium Terpadu JL.PERINTIS KEMERDEKAAN KAMPUS TAMALANREA KM.10 MAKASSAR 90245. Contact Person: dr. Agussalim Bukhari.,MMed.PHD, Sp.GK Telp. 081241850858, 0411 5780103, Fax : 0411-581431</b>		
<b>REKOMENDASI PERSETUJUAN ETIK</b> Nomor : 666/UN4.6.4.5.31/ PP36/ 2020 Tanggal: 20 Oktober 2020 Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :			
No Protokol	UH20080425	No Sponsor Protokol	
Peneliti Utama	<b>dr. Nur Alam</b>	Sponsor	
Judul Peneliti	Perbandingan gambaran ultrasonography gray scale dan doppler parenkim hepar berdasarkan scoring system dengan pemeriksaan fibroscan pada pasien hepatitis B kronik		
No Versi Protokol	2	Tanggal Versi	18 Oktober 2020
No Versi PSP	2	Tanggal Versi	<b>18 Oktober 2020</b>
Tempat Penelitian	<b>RSUP Dr.Wahidin Sudirohusodo Makassar</b>		
Jenis Review	<input type="checkbox"/> Exempted <input checked="" type="checkbox"/> Expedited <input type="checkbox"/> Fullboard Tanggal	Masa Berlaku <b>20 Oktober 2020</b> sampai <b>20 Oktober 2021</b>	Frekuensi review lanjutan
Ketua Komisi Etik Penelitian Kesehatan FKUH	Nama <b>Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)</b>		Tanda tangan 
Sekretaris Komisi Etik Penelitian Kesehatan FKUH	Nama <b>dr. Agussalim Bukhari, M.Med.,Ph.D.,Sp.GK (K)</b>		Tanda tangan 
Kewajiban Peneliti Utama: <ul style="list-style-type: none"> <li>• Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan</li> <li>• Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Lapor SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan</li> <li>• Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah</li> <li>• Menyerahkan laporan akhir setelah Penelitian berakhir</li> <li>• Melaporkan penyimpangan dari prokol yang disetujui (protocol deviation / violation)</li> <li>• Mematuhi semua peraturan yang ditentukan</li> </ul>			

## **Lampiran 2**

### **PERSETUJUAN SETELAH PENJELASAN (Informed Consent)**

Saya yang bertanda tangan dibawah ini, orang tua/wali :

Nama :  
Umur/Kelamin :  
Alamat :  
`

Dengan ini menyatakan dengan sesungguhnya serta memberikan persetujuan dan bersedia menjalani atau mengikuti penelitian ini setelah mendapat penjelasan dari peneliti (dokter) dan mengerti sepenuhnya tentang prosedur penelitian yang akan dilakukan.

Demikian pernyataan ini saya buat dengan penuh kesadaran tanpa paksaan dari pihak manapun.

Tanggal:.....

Saksi-saksi  
Tanda tangan :

1.  
(.....) (.....)  
2.  
(.....)

Tempat meminta penjelasan:

Pejabat Peneliti : dr. Nur Alam  
Nama : Melia Artapura No.6  
Alamat : 081230607757  
Telepon (HP) : Prof. Dr.dr. Bachtiar Murtala, Sp.Rad(K)  
Penanggungjawab Medis : Jl. Raya Pendidikan Komp. UNM, Makassar  
Alamat : 08114444920  
Telepon (HP)

pejabat Medis (dr. yang merawat)

### Lampiran 3 . Data dan Sampel penelitian

No	Nama	JK	umur	Echo parenkim	permukaan	Tepi hati	Ukuran hati	Diameter lien	Diameter RHP	MPV	MPPV	Scoring USG	Scoring fibros
1	Amr	Lk	47	homogen	smooth	Tajam	normal	<10	0,72	0,82	14	0	4,4(F0-1)
2.	ros	Pr	52	homogen	smooth	tajam	normal	<10	0,41	0,26	14	0	3,1(F0-1)
3.	Mr	Lk	41	Sngat ksr	irreg	tmpul	normal	<10	0,54	0,71	9	4	15,5(F3F4)
4.	His	Lk	47	homogen	smooth	tajam	normal	<10	0,62	0,51	15	0	4,7(f0-F1)
5.	Alg	lk	26	homogen	smooth	tajam	normal	<10	0,37	0,36	17	0	5,4(F0-F1)
6.	naj	lk	34	homogen	smooth	tajam	normal	<10	0,71	0,35	16	1	8,9(F2-F3)
7.	yer	pr	41	homogen	smooth	tajam	Normal	<10	0,27	0,65	15	1	6,2(F0-F1)
8.	ahm	lk	45	kasar	smooth	tmpul	normal	12	0,23	0,19	14	3	13,8(F3-F4)
9.	alx	lk	25	homogen	smooth	tajam	normal	<10	0,45	0,53	17	0	5,3(F0-F1)
10.	Akm	lk	40	homogen	smooth	tajam	Normal	<10	0,6,3	0,69	17	0	4,7(F0-F1)
11.	par	lk	32	homogen	smooth	tajam	normal	<10	0,47	0,42	17	0	5,7(F0-F1)
12.	Tar	lk	35	homogen	smooth	tajam	normal	<10	0,35	0,51	18	0	7,5(F1)
13.	Mul	pr	64	homogen	smooth	tajam	normal	<10	0,49	0,25	16	0	4,0(F0-F1)
14.	War	pr	41	homogen	smooth	tajam	normal	<10	0,53	0,51	16	0	4,5(F0-F1)
15.	Rid	lk	42	Sngt ksr	smooth	tajam	normal	15	0,51	0,16	18	4	12,2(F3-F4)
16.	Ask	lk	49	homogen	smooth	tajam	normal	<10	0,73	0,22	18	0	8,3(F2-F3)
17.	War	pr	49	homogen	smooth	tajam	normal	<10	0,43	0,31	16	0	4,5(F0-F1)
18.	Ten	lk	46	homogen	smooth	tajam	normal	<10	0,61	0,34	20	0	7,4(F2)
19.	imr	lk	64	Sngt ksr	smooth	tajam	normal	<10	0,34	0,49	16	0	11,6(F3-F4)
20.	fais	lk	29	homogen	smooth	tajam	normal	<10	0,33	0,51	17	0	4,2(F0-F1)
21.	sup	lk	52	Sngt ksar	irreg	tajam	Normal	<10	0,37	0,33	17	3	21,3(F4)
22.	ilh	lk	48	homogen	smooth	tajam	normal	<10	0,63	0,20	18	0	6,5(F0-F1)
23.	sat	pr	61	homogen	smooth	tajam	normal	<10	0,38	0,57	16	0	5,5 (F0-F1)
24.	Har	pr	49	Sngt ksar	smooth	tajam	normal	<10	0,38	0,24	16	2	13,5(F3-F4)
25.	sai	lk	44	homogen	smooth	tajam	normal	<10	0,49	0,55	17	0	6,7(F0-F1)
26.	ira	pr	50	homogen	smooth	tajam	Normal	<10	0,50	0,29	16	0	5,5(F0-F1)
27.	abs	lk	50	homogen	smooth	tajam	normal	<10	0,26	0,45	16	0	5,0(F0-F1)
28.	has	pr	37	homogen	smooth	tajam	normal	<10	0,71	0,35	18	0	5,8 (F0-F1)
29.	wah	pr	58	homogen	smooth	tajam	normal	<10	0,49	0,22	18	0	5,7(F0)
30.	ben	lk	43	Sngat ksr	smooth	tajam	normal	12	0,59	0,34	17	2	17,1(F3-F4)
31	Sah	lk	52	homogen	smooth	tajam	normal	<10	0,29	0,33	20	0	6,7(F0-F1)
32	Nah	lk	40	homogen	smooth	tajam	normal	<10	0,29	0,33	20	0	6,7(F0-F1)

0-5(F0-F1)

5-10 (F2-F3)

10-15 (F3-F4)

## **Lampiran 4.**

### **CURRICULUM VITAE**

#### **1. Data Pribadi**

- |                         |                                  |
|-------------------------|----------------------------------|
| 1. Nama                 | : dr.Nur Alam                    |
| 2. Agama                | : Islam                          |
| 3. Tempat/tanggal lahir | : Poso, 10-Desember 1987         |
| 4. Alamat               | : Perumahan melia atapura no 6   |
| 5. Nama Ayah/Ibu        | : (Alm) H.Keteng/Hj.Djohar Saing |
| 6. Saudara kandung      | : Dr.H.Faidul Keteng, ST, MT,MSI |
| 7. Status Sipil         | : Menikah                        |

#### **II. Riwayat Pendidikan**

- |                    |  |
|--------------------|--|
| 1. SD              | : SD Negeri 33 poso, tahun lulus 1999  |
| 2. SMP             | : SMP Negeri 4 Palu, tahun lulus 2002  |
| 3. SMA             | : SMA Negeri 1 Poso, tahun lulus 2005  |
| 4. Pergurun tinggi | : Fakultas Kedokteran Universitas Muslim Indonesia, tahun lulus 2005               |
| 5. Profesi Dokter  | : Fakultas Kedokteran Universitas Hasanuddin, tahun lulus 2012                     |
| 6. PPDS            | : Bagian Radiologi Fakultas Kedokteran Universitas Hasanuddin periode Januari 2017 |

#### **III. Riwayat Pekerjaan :**

1. Dokter Umum Puskesmas Kayamanya Kabupaten Poso

#### **IV. Makalah pada konferensi ilmiah nasional “ Radiology Asia Conference and exhibition. Cervical Osteochondroma**