UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Abbas, A., Rehman, M. S., & Rehman, S. S. (2024). Comparing the Performance of Popular Large Language Models on the National Board of Medical Examiners Sample Questions. *Cureus*. 16 (3), e55991.

Abbas, A.W., Hussain, M. (2021). A Literature Review of Artificial Intelligence. *UMT Artificial Intelligence Review*. 1(1): 01-27.

Aboalshamat, K. T. (2022). Perception and Utilization of Artificial Intelligence (AI) among Dental Professionals in Saudi Arabia. *The Open Dentistry Journal*, 16(1).

Aghasy, A.Z.Z., Lazuardi, M.L. dan Josef, H.K. (2026). Benchmarking Large Language Models for Dental Clinical Decision Support: A BERT Score Analysis of Claude Opus 4.5. *International Journal of Advanced Computer Science and Applications (IJACSA*).

Aghasy, A.Z.Z., Lazuardi, M.L. dan Josef, H.K. (dalam terbitan) Evaluating Large Language Models for Indonesian Dental Diagnostic Accuracy Improvement. *IAES International Journal of Artificial Intelligence (IJ-AI).*

Aghasy, A.Z.Z., Lazuardi, M.L. dan Josef, H.K. (dalam terbitan). HL7 FHIR Implementation in Indonesian Primary Dental Care Facilities. *IAES International Journal of Artificial Intelligence (IJ-AI).*

Aisera. (2025). *RAG vs Fine Tuning: The Ultimate Side by Side Comparison*. Tersedia Pada: https://aisera.com/blog/llm-fine-tuning-vs-rag/ (Diakses 24 Oktober 2025).

Alibaba Cloud. (2024). Qwen2.5: A series of large language models. *arXiv* preprint arXiv:2407.10671.

Altexsoft. (2020). *Clinical Decision Support Systems: How They Improve Care and Cut Costs*. Tersedia Pada: https://www.altexsoft.com/blog/clinical-decision-support-systems/ (Diakses 24 Maret 2024).

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

American Dental Association (2024). *Dentist Workforce. ADA Health Policy Institute.* Tersedia Pada: https://www.ada.org/resources/research/health-policy-institute/dentist-workforce (Diakses 24 Oktober 2025)

American Medical Association (2019) *Augmented Intelligence in Health Care Policy Report. Chicago: AMA*. Tersedia Pada: https://www.ama-assn.org/system/files/2019-08/ai-2018-board-policy-summary.pdf (Diakses 15 Desember 2025).

Anthropic (2024) The Claude Model Family: Claude 3 Opus, Sonnet, and Haiku. San Francisco: Anthropic. Tersedia Pada: https://www-cdn.anthropic.com/de8ba9b01c9ab7cbabf5c33b80b7bbc618857627/Model_Card_Claude_3.pdf (Diakses 15 Juni 2025).

Anthropic. (2024). *Claude 3 Model Card. San Francisco: Anthropic*. Tersedia Pada: https://www.anthropic.com/claude (Diakses 15 Juni 2025).

Anthropic. (2024). *Claude: Constitutional AI and large language models*. Tersedia Pada: https://www.anthropic.com/constitution (Diakses 15 Juni 2025).

Anthropic. (2025). *Claude 4 Model Card*. Anthropic. Tersedia Pada: https://www-cdn.anthropic.com/6d8a8055020700718b0c49369f60816ba2a7c285/Claude%204%20System%20Card.pdf (Diakses 15 Juni 2025).

Anthropic. (2025). *Claude API documentation*. Tersedia Pada: https://docs.anthropic.com/claude/docs (Diakses 15 Juni 2025).

Anthropic. (2025). *Claude API Pricing Documentation*. Tersedia Pada: https://platform.claude.com/docs/en/about-claude/pricing (Diakses 15 Juni 2025).

Ash, J. S., Sittig, D. F., Campbell, E. M., Guappone, K. P., & Dykstra, R. H. (2007). Some unintended consequences of clinical decision support systems. AMIA Annual Symposium proceedings. AMIA Symposium, 2007, 26–30.

Assarroudi, A., Heshmati Nabavi, F., Armat, M. R., Ebadi, A., & Vaismoradi, M. (2018). Directed qualitative content analysis: the description and

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

elaboration of its underpinning methods and data analysis process. *Journal of Research in Nursing*, 23(1), 42-55.

Astari, L. A., Amalia, I., Indra, L., Sanjaya, G. Y., & Fuad, A. (2025). Assessing the Fidelity of Electronic Health Record Implementation Using SatuSehat Platform in Indonesia. *Studies in health technology and informatics*, 329, 1614–1615.

Avionhela, A. (2023). Tren dan determinan utilisasi perawatan gigi di fasilitas kesehatan tingkat pertama oleh peserta jaminan kesehatan nasional (analisis data sampel BPJS Kesehatan 2015-2020)

Azadi, A., Gorjinejad, F., Mohammad-Rahimi, H., Tabrizi, R., Alam, M., & Golkar, M. (2024). Evaluation of AI-generated responses by different artificial intelligence chatbots to the clinical decision-making case-based questions in oral and maxillofacial surgery. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology*.

Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI. (2018). *Riset Kesehatan Dasar (Riskesdas) 2018*. Kementerian Kesehatan Republik Indonesia.

Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI. (2018). *Laporan Provinsi Daerah Istimewa Yogyakarta: Riskesdas 2018*. Kementerian Kesehatan Republik Indonesia.

Badan Pengkajian dan Penerapan Teknologi. (2020). *Strategi Nasional Kecerdasan Artifisial Indonesia 2020-2045*. Jakarta: Kementerian Komunikasi dan Informatika Republik Indonesia.

Badan Penyelenggara Jaminan Sosial Kesehatan. (2020). *Statistik JKN 2015-2019.* Jakarta: BPJS Kesehatan.

Badan Penyelenggara Jaminan Sosial. (2014*). Petunjuk Teknis Verifikasi Klaim.* Jakarta: Kementerian Kesehatan Republik Indonesia

Badan Penyelenggara Jaminan Sosial. (2022*). Statistik JKN 2016-2021*. Jakarta: Kementerian Kesehatan Republik Indonesia

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Bai, Y., Jones, A., Ndousse, K., Askell, A., Chen, A., DasSarma, N., Drain, D., Fort, S., Ganguli, D., Henighan, T., Joseph, N., Kadavath, S., Kernion, J., Conerly, T., El-Showk, S., Elhage, N., Hatfield-Dodds, Z., Hernandez, D., Hume, T., Johnston, S., Kravec, S., Lovitt, L., Nanda, N., Olsson, C., Amodei, D. dan Amodei, D. (2022) Constitutional AI: Harmlessness from AI Feedback. *arXiv preprint* arXiv:2212.08073.

Bao, H., Wang, W., Dong, L., Liu, Q., Mohammed, O. K., Aggarwal, K., Som, S., & Wei, F. (2021). VLMo: Unified Vision-Language Pre-Training with Mixture-of-Modality-Experts*. ArXiv*. /abs/2111.02358

Bathaee, Y. (2018). The Artificial Intelligence Black Box and The Failure of Intent and Causation*. Harvard Journal of Law & Technology*, 31(2), 889-938.

Bayrakdar, I. S., Orhan, K., Akarsu, S., Çelik, Ö., Atasoy, S., Pekince, A., Yasa, Y., Bilgir, E., Sağlam, H., Aslan, A. F., & Odabaş, A. (2022). Deep-learning approach for caries detection and segmentation on dental bitewing radiographs. *Oral radiology*, 38(4), 468–479.

Bell, C. M., Jalali, A., & Mensah, E. (2013). A Decision Support Tool for Using an ICD-10 Anatomographer to Address Admission Coding Inaccuracies: A Commentary. *Online journal of public health informatics*, 5 (2): 222.

Bergen, N. dan Labonté, R. (2020). "Everything is perfect, and we have no problems": detecting and limiting social desirability bias in qualitative research. *Qualitative Health Research*, 30(5), 783–792.

Bergman, L.G., Fors, U.G. (2008) Decision support in psychiatry – a comparison between the diagnostic outcomes using a computerized decision support system versus manual diagnosis. *BMC Med Inform Decis Mak* 8, 9.

Berner, E. S. (2007). *Clinical Decision Support Systems: Theory and Practice* (2nd ed.). Springer Science+Business Media, LLC.

Bhattacharyya, K. (2025). The economics of accuracy for medical reasoning with large language models. *medRxiv.*

Bloom, B. S. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals.* Handbook I: Cognitive Domain. Longmans, Green and Co.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Bommasani, R., Hudson, D. A., Adeli, E., et al. (2022). On the opportunities and risks of foundation models. *arXiv preprint* arXiv:2108.07258.

BPJS Kesehatan. (2014). *Panduan Praktis Sistem Rujukan Berjenjang*. Badan Penyelenggara Jaminan Sosial Kesehatan.

BPJS Kesehatan. (2014*). Peraturan BPJS Kesehatan tentang Pelayanan Kesehatan Gigi dan Mulut*. BPJS Kesehatan.

BPJS Kesehatan. (2023). *Laporan Pengelolaan Program dan Laporan Keuangan Jaminan Sosial Kesehatan Tahun 2023*. Jakarta: BPJS Kesehatan.

BPJS Kesehatan. (2024). *Panduan penggunaan Aplicares BPJS Kesehatan*. Jakarta: BPJS Kesehatan.

Braun, V. dan Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, 3(2), 77-101.

Bright, T. J., Wong, A., Dhurjati, R., Bristow, E., Bastian, L., Coeytaux, R. R., ... & Lobach, D. (2012). Effect of clinical decision-support systems: A systematic review. *Annals of Internal Medicine*, 157(1), 29-43.

Brown, T. B., Mann, B., Ryder, N., Subbiah, M., Kaplan, J., Dhariwal, P., ... & Amodei, D. (2020). Language models are few-shot learners*. Advances in Neural Information Processing Systems*, 33, 1877-1901.

BSA. (2025). *BSA Recommendations for White Paper on National Artificial Intelligence Roadmap and Artificial Intelligence Ethics Guidelines*. BSA | The Software Alliance.

Buonocore, T.M., Russo, A., Mingarelli, D., dan Parimbelli, E. (2026). Generalist large language models in a specialized world: Evidence from the Italian national medical education pathway. *PLOS Digital Health,* 5(4), e0001363.

Cabitza, F., Campagner, A., Malgieri, G., Natali, C., Shortliffe, E.H., Sconfienza, L.M. dan Beltrame, G. (2023) *Quod erat demonstrandum? Towards a typology of the concept of explanation for the design of explainable AI*, Expert Systems with Applications, 213, 118888.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Campus, G., Maclennan, A., von Hoyningen-Huene, J., Wolf, T. G., FDI Section Women Dentists Worldwide Collaboration Group, Aerden, M., Benyahya, I., Bonaventura, J., Brolese, E. L. K., Linton, J. L., Gogilashvili, K., Marron-Tarrazi, I., Ilhan, D., Iwasaki, M., Grzech-Lesniak, K., Perlea, P., & Thabet, N. (2024). The Presence of Women in the Dental Profession: A Global Survey. *International dental journal*, 74(1), 110–118.

Carigi Indonesia. (2024). DIGMAN: *Digital Management App untuk Fasilitas Kesehatan Gigi dan Mulut*. Tersedia Pada: https://carigi.id/digman (Diakses 30 Maret 2025).

Carlsen, B., & Glenton, C. (2011). What about N? A methodological study of sample-size reporting in focus group studies. *BMC Medical Research Methodology*, 11, 26.

Casalegno, F., Newton, T., Daher, R., Abdelaziz, M., Lodi-Rizzini, A., Schürmann, F., Krejci, I., & Markram, H. (2019). Caries Detection with Near-Infrared Transillumination Using Deep Learning. *Journal of Dental Research*, 98(11), 1227–1233.

CDS Hooks. (2025). *Clinical Decision Support Hooks Specification v2.0. HL7 International*. Tersedia Pada: https://cds-hooks.org/ (Diakses 24 Maret 2025)

Chang, I.C., Hwang, H.G., Hung, W.F. dan Li, Y.C. (2007). Physicians' Acceptance of Pharmacokinetics-Based Clinical Decision Support Systems. *Expert Systems with Applications*, 33(2), 296-303.

Chang, T., Chao, M., Yu, W., & Lin, C. (2021). Extending the Utility of UTAUT2 for Hospital Patients' Adoption of Medical Apps: Moderating Effects of e-Health Literacy. *Mobile Information Systems*, 2021(1), 8882317.

Chen, H., Cohen, P., & Chen, S. (2010). How Big is a Big Odds Ratio? Interpreting the Magnitudes of Odds Ratios in Epidemiological Studies. *Communications in Statistics - Simulation and Computation*, 39(4), 860-864.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Chen, M., Tworek, J., Jun, H., et al. (2024). Evaluating large language models trained on code*. arXiv preprint* arXiv:2107.03374.

Chen, P., Huang, Z., Deng, Z., Li, T., Su, Y., Wang, H., Ye, J., Qiao, Y., & He, J. (2023). Enhancing Medical Task Performance in GPT-4V: A Comprehensive Study on *Prompt* Engineering Strategies. *ArXiv*. /abs/2312.04344

Chen, Z., Wang, C., Sun, W., Liu, X., Zhang, J. M., & Liu, Y. (2026). *Promptware Engineering: Software Engineering for Prompt-Enabled Systems*. ACM Transactions on Software Engineering and Methodology.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum Associates.

Complete AI Training. (2025). *AI in Indonesian Healthcare 2025: Real-World Impact, National Ambitions, and the Road Ahead*. Complete AI Training.

Conti, G., Zangani, A., Di Cosola, M., Melloni, F., Balliu, F., Magnelli, C. M., De Manzoni, R., Goordeva, V., Poli, G., Faccioni, P., & Bardellini, E. (2025). Artificial Intelligence in Oral Medicine: Current Potential and Future Scenarios. *Journal of Applied Cosmetology*, *43*(2), 259/263.

Council for International Organizations of Medical Sciences (CIOMS). (2016). *International ethical guidelines for health-related research involving humans* (4th ed.). Geneva: CIOMS.

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). SAGE Publications.

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and Conducting Mixed Methods Research* (3rd ed.). SAGE Publications.

Dady, R.D., 2026. Perlindungan Hukum Data Pribadi Pasien pada Rekam Medis Elektronik: Analisis Hukum Kesehatan Indonesia. *Glosains: Jurnal Sains Global Indonesia*, 7(2).

Dancey, C.P. dan Reidy, J., 2007. *Statistics without maths for psychology*. Edisi ke-4. London: Pearson Education.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Dapkins, I., Prescott, R., Ladino, N., Hernandez, L., Delgado, D., Rosario, E.R., ... dan Hanna, K. (2024). A Dynamic Clinical Decision Support Tool to Improve Primary Care Outcomes in a High-Volume, Low- Resource Setting. *NEJM Catalyst Innovations in Care Delivery*, 5(3), CAT.23.0366.

Das, M., Shahnawaz, K., Raghavendra, K., Kavitha, R., Nagareddy, B., & Murugesan, S. (2024). Evaluating the Accuracy of AI-Based Software vs Human Interpretation in the Diagnosis of Dental Caries Using Intraoral Radiographs: An RCT. *Journal of pharmacy & bioallied sciences*, 16(Suppl 1), S812–S814.

Databricks. (2023). Introduction to Large Language Models. Databricks Documentation. Tersedia Pada: https://docs.databricks.com/machine-learning/llm/index.html (Diakses 1 April 2025)

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.

Dean, A. G., Sullivan, K. M., & Soe, M. M. (2013). OpenEpi: Open source epidemiologic statistics for public health (Version 3.01). Tersedia Pada: https://www.openepi.com (Diakses 24 Oktober 2025)

DeepSeek AI. (2025). *DeepSeek-V3 technical report*. Tersedia Pada: https://www.DeepSeek.com (Diakses 24 Oktober 2025)

DeepSeek. (2024*). DeepSeek-V2: A strong, economical, and efficient mixture-of-experts language model. arXiv preprint* arXiv:2405.04434.

DeepSeek. (2025). *DeepSeek API Pricing Documentation*. Tersedia Pada: https://api-docs.DeepSeek.com/quick_start/pricing (Diakses 24 Oktober 2025)

Dettmers, T., Lewis, M., Belkada, Y. dan Zettlemoyer, L. (2022) GPT3.int8(): 8-bit Matrix Multiplication for Transformers at Scale, *Advances in Neural Information Processing Systems*, 35, pp. 30318-30332.

Dettmers, T., Pagnoni, A., Holtzman, A., & Zettlemoyer, L. (2023). QLoRA: Efficient Finetuning of Quantized LLMs. *Advances in Neural Information Processing Systems*, 36.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Dewan Jaminan Sosial Nasional. (2021). *Program Jaminan Kesehatan*. Jakarta.

Dias, D. (2018). Wearable Health Devices—Vital Sign Monitoring, Systems and Technologies. *Sensors*, 18 (8): 2414.

DICOM Standards Committee. (2024). *Digital Imaging and Communications in Medicine (DICOM)*. DICOM. Tersedia Pada https://www.dicomstandard.org/ (Diakses 12 Oktober 2025)

Dilmegani, C. (2024). Large Multimodal Models (LMMs) vs Large Language Models (LLMs). Tersedia Pada: https://research.aimultiple.com/large-multimodal-models/ (Diakses 20 Maret 2025)

Dingel, J., Kleine, A.K., Cecil, J., Sigl, A. dan Lermer, E. (2024). Predictors of Healthcare Practitioners' Intention to Use AI-Enabled Clinical Decision Support Systems (AI-CDSSs): A Meta-Analysis Based on the Unified Theory of Acceptance and Use of Technology (UTAUT). *JMIR Preprints*.

Du, W., Jin, X., Harris, J. C., Brunetti, A., Johnson, E., Leung, O., Li, X., Walle, S., Yu, Q., Zhou, X., Bian, F., McKenzie, K., Kanathanavanich, M., Ozcelik, Y., El-Sharkawy, F., & Koga, S. (2024). Large language models in pathology: A comparative study of ChatGPT and Bard with pathology trainees on multiple-choice questions. *Annals of diagnostic pathology*, 73, 152392.

Dwork, C. dan Roth, A. (2014) The Algorithmic Foundations of Differential Privacy, *Foundations and Trends in Theoretical Computer Science*, 9(3-4), pp. 211-407.

Dymm, B., & Goldenholz, D. M. (2026). Prompting is All You Need: How to Make LLMs More Helpful for Clinical Decision Support. *medRxiv*, 2026-02.

Eggmann, F., Weiger, R., Zitzmann, N. U., & Blatz, M. B. (2023). Implications of large language models such as ChatGPT for dental medicine. *Journal of Esthetic and Restorative Dentistry*, 35(7), 1098–1102.

Ehtesham, H., Safdari, R., Mansourian, A., Tahmasebian, S., Mohammadzadeh, N., & Pourshahidi, S. (2019). Developing a new intelligent system for the diagnosis of oral medicine with case-based reasoning approach. *Oral Diseases*, 25(6), 1555–1563.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Eiskjær, S., Pedersen, C. F., Skov, S. T., & Andersen, M. Ø. (2023). Usability and performance expectancy govern spine surgeons' use of a clinical decision support system for shared decision-making on the choice of treatment of common lumbar degenerative disorders. *Frontiers in Digital Health*, 5.

Elhaddad, M., Hamam, S. dan Mohammed, A. (2024). AI-Driven Clinical Decision Support Systems: An Ongoing Pursuit of Potential. *Cureus*, 16(4), e57728.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107-115.

Epoch AI. (2024). Trends in Machine Learning Hardware and Compute. Epoch AI Research Report.

Eriwati, Y. K., & Palupi, A. P. S. (2023). *Buku pedoman penyelenggaraan uji kompetensi mahasiswa program profesi dokter gigi untuk panitia nasional UKMP2DG*. UI Publishing.

Eschert, T., Schwendicke, F., Krois, J., Bohner, L., Vinayahalingam, S., & Hanisch, M. (2022). A survey on the use of artificial intelligence by clinicians in dentistry and oral and maxillofacial surgery. *Medicina*, 58(8), 1059.

Eslami, S., de Keizer, N. F., Dongelmans, D. A., de Jonge, E., Schultz, M. J., & Abu-Hanna, A. (2012). Effects of two different levels of computerized decision support on blood glucose regulation in critically ill patients. *International journal of medical informatics*, 81 (1): 53-60.

Esmaeilzadeh, P., Mirzaei, T., & Dharanikota, S. (2021). Patients' Perceptions Toward Human-Artificial Intelligence Interaction in Health Care: Experimental Study. *Journal of medical Internet research*, 23(11), e25856.

Etemad, L., Wu, T. H., Heiner, P., Liu, J., Lee, S., Chao, W. L., Zaytoun, M. L., Guez, C., Lin, F. C., Jackson, C. B., & Ko, C. C. (2021). Machine learning from clinical data sets of a contemporary decision for orthodontic tooth extraction. *Orthodontics & craniofacial research*, 24 Suppl 2, 193–200.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

European Medicines Agency (2015) *Guideline on adjustment for baseline covariates in clinical trials*. EMA/CHMP/295050/2013. London: EMA.

Fajri, D. M. N., Mahmudy, W. F., & Anggodo, Y. P. (2017). *Optimization of FIS Tsukamoto using particle swarm optimization for dental disease identification.* Int Conf Adv Comput Sci Inf Syst ICACSIS 2017. 2018;2018-Janua:261-267.

FDI World Dental Federation. (2015). *The Challenge of Oral Disease: A Call for Global Action. The Oral Health Atlas* (2nd ed.). FDI World Dental Federation.

Field, A. (2009*). Discovering Statistics Using SPSS* (3rd ed.). SAGE Publications.

Field, A. (2018) *Discovering Statistics Using IBM SPSS Statistics.* 5th ed. London: SAGE Publications.

Finch, W. H., & French, B. F. (2013). A Monte Carlo Comparison of Robust MANOVA Test Statistics*. Journal of Modern Applied Statistical Methods*, 12(2), 35-81.

Finkelstein, J., Gabriel, A., Schmer, S., Truong, T. T., & Dunn, A. (2024). Identifying Facilitators and Barriers to Implementation of AI-Assisted Clinical Decision Support in an Electronic Health Record System. *Journal of medical systems*, *48*(1), 89.

Firestone, A. R., Sema, D., Heaven, T. J., & Weems, R. A. (1998). The effect of a knowledge-based, image analysis and clinical decision support system on observer performance in the diagnosis of approximal caries from radiographic images. *Caries research*, 32(2), 127-134.

FKKMK UGM. (2013). Dalam Era BPJS, Coder Rekam Medis dan Dokter Harus Pahami Benar ICD-10. Tersedia Pada: https://fkkmk.ugm.ac.id/dalam-era-bpjs-coder-rekam-medis-dan-dokter-harus-pahami-benar-icd-10/ (Diakses 12 Maret 2025)

Frantar, E., Ashkboos, S., Hoefler, T., & Alistarh, D. (2023). GPTQ: Accurate Post-Training Quantization for Generative Pre-trained Transformers. *International Conference on Learning Representations.*

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Garg, A.X., Adhikari, N.K.J., McDonald, H., Rosas-Arellano, M.P., Devereaux, P.J., Beyene, J., Sam, J. dan Haynes, R.B. (2005). Effects of Computerized Clinical Decision Support Systems on Practitioner Performance and Patient Outcomes: A Systematic Review. *JAMA*, 293(10), 1223-1238. doi: 10.1001/jama.293.10.1223.

Gerganov, G. (2023). *llama.cpp: Inference of LLaMA model in pure C/C++* [Software]. Tersedia Pada: https://github.com/ggerganov/llama.cpp. (Diakses 4 Maret 2025).

Gill, P., Stewart, K., Treasure, E. dan Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *British Dental Journal,* 204(6), 291–295.

Goddard, K., Roudsari, A. dan Wyatt, J.C. (2012). Automation bias: a systematic review of frequency, effect mediators, and mitigators, *Journal of the American Medical Informatics Association*, 19(1), pp. 121-127.

Goh, E., Gallo, R., Hom, J., Strong, E., Weng, Y., Kerman, H., Cool, J.A., Kanjee, Z., Parsons, A.S., Ahuja, N., Horvitz, E., Yang, D., Milstein, A., Olson, A.P.J., Rodman, A. dan Chen, J.H. (2024). Large Language Model Influence on Diagnostic Reasoning: A Randomized Clinical Vignette Trial, *JAMA Network Open*, 7(10), e2440969.

Gomez, K. (2023). *Palm-E, An All-New Next Generation Multi-Modality Model*. Tersedia pada: https://medium.com/@kyeg/palm-e-an-all-new-next-generation-multi-modality-model-2b1d3b628d34. (Diakses 8 Januari 2025).

Gomez-Cabello, C. A., Borna, S., Pressman, S., Haider, S. A., Haider, C. R., & Forte, A. J. (2024). Artificial-Intelligence-Based Clinical Decision Support Systems in Primary Care: A Scoping Review of Current Clinical Implementations. *European journal of investigation in health, psychology and education*, 14(3), 685–698.

Google DeepMind. (2024). *Gemini: A Family of Highly Capable Multimodal Models*. Mountain View, CA: Google. Tersedia di: https://deepmind.google/technologies/gemini/. (Diakses 15 Oktober 2024).

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Google DeepMind. (2025). *Gemini 2.0: A new generation of AI models*. Tersedia pada: https://deepmind.google/technologies/gemini/. (Diakses 11 April 2025)

Google DeepMind. (2025). *Gemma 3 Technical Report*. Google. Tersedia pada: https://ai.google.dev/gemma. (Diakses 11 April 2025)

Google Research. (2025). *MedGemma: Medical domain-optimized language model*. Tersedia pada: https://huggingface.co/google/medgemma. (Diakses 11 April 2025)

Google. (2024). *Gemini Pro: A leap in multimodal AI capabilities*, Google AI Blog. Tersedia Pada: https://blog.google/products/ai/gemini-pro-multimodal-capabilities/. (Diakses 20 Mei 2024).

Google. (2024). *Gemma: Open models based on Gemini research and technology*. Tersedia pada: https://ai.google.dev/gemma. (Diakses 5 Maret 2025).

Google. (2024). *MedGemma: Medical foundation models*. Tersedia pada: https://ai.google.dev/. (Diakses 5 Maret 2025).

Google. (2025). *Gemini API Pricing Documentation*. Tersedia pada: https://ai.google.dev/gemini-api/docs/pricing. (Diakses 5 Maret 2025).

Gräf, M., Knitza, J., Leipe, J., Krusche, M., Welcker, M., Kuhn, S., Mucke, J., Hueber, A. J., Hornig, J., Klemm, P., Kleinert, S., Aries, P., Vuillerme, N., Simon, D., Kleyer, A., Schett, G., & Callhoff, J. (2022). Comparison of physician and artificial intelligence-based symptom checker diagnostic accuracy. *Rheumatology international*, 42 (12): 2167–2176.

Gravitee. (2025). *API Management Platform Documentation*. Gravitee.io. Tersedia Pada: https://docs.gravitee.io/. (Diakses 13 Maret 2025).

Greenes, R. A. (2014). *Clinical Decision Support: The Road to Broad Adoption* (2nd ed.). Academic Press.

Greyling, C. (2023). *What Is Multi-Task Language Understanding or MMLU?*. Tersedia Pada: https://cobusgreyling.medium.com/what-is-multi-task-language-understanding-or-mmlu-22e93e036c49. (Diakses 10 Januari 2025).

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Guest, G., Namey, E., & McKenna, K. (2017). How Many Focus Groups Are Enough? Building an Evidence Base for Nonprobability Sample Sizes. *Field Methods*, 29(1), 3-22.

Guinness, H. (2024). *What is multimodal AI? Large multimodal models, explained*. Tersedia Pada: https://zapier.com/blog/multimodal-ai/. (Diakses 23 Januari 2025).

Haberman, S. J. (2009). Linking Parameter Estimates Derived from an Item Response Model Through Separate Calibrations. *ETS Research Report Series*, 2009(1), i-9.

Haberman, S., Feldman, J., Merhi, Z. O., Markenson, G., Cohen, W., & Minkoff, H. (2009). Effect of clinical-decision support on documentation compliance in an electronic medical record. *Obstetrics & Gynecology*, 114(2), 311–317.

Han, T., Adams, L. C., Bressem, K. K., Busch, F., Nebelung, S., & Truhn, D. (2024). Comparative Analysis of Multimodal Large Language Model Performance on Clinical Vignette Questions. *JAMA*, 331 (15): 1320.

Hanindriyo, L., Hendrartini, J., Priyono, B., Pramono, A. dan Hanung, G. (2016). *Evaluasi Ketepatan Rujukan Dokter Gigi Primer dalam Pelaksanaan JKN di Indonesia: Laporan Penelitian*. Yogyakarta: BPJS Kesehatan dan Fakultas Kedokteran Gigi Universitas Gadjah Mada.

Hanung, G. (2018). *Evaluasi Ketepatan Rujukan Dokter Gigi pada Fasilitas Kesehatan Tingkat Pertama (FKTP) di Fasilitas Kesehatan Tingkat Lanjut*. Tesis. Yogyakarta: Universitas Gadjah Mada.

Hariyani, N., Sari, D. S., & Ismail, A. (2022). Risk factors for dental caries in adults aged 35-44 years in DKI Jakarta: A cross-sectional study using the 2018 national Riskesdas data. *BMC Oral Health*, 22(1), 234.

Hariyani, N., Shanbhag, N., Wijayati, E. W., Prananta, A. W., Setyowati, D., & Palupi, R. (2022). Teledentistry and Online Referral System in Indonesian Primary Health Care Center During the COVID-19 Pandemic: A Narrative Review. *Journal of International Society of Preventive & Community Dentistry*, 12(4), 385–392.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Harlow, L.L. and Duerr, S.R. (2013). Multivariate analysis of variance, in Teo, T. (ed.) *Handbook of Quantitative Methods for Educational Research*. Rotterdam: SensePublishers, pp. 121–142.

Hasani, N., Morris, M. A., Rhamim, A., Summers, R. M., Jones, E., Siegel, E., & Saboury, B. (2022). Trustworthy Artificial Intelligence in Medical Imaging. *PET clinics*, 17(1), 1–12.

Hassanein, F.E.A., Alkabazi, M., Tassoker, M., Ahmed, Y., Alsaeed, S., & Abou-Bakr, A. (2026). Multimodal large language models for oral lesion diagnosis: a systematic review of diagnostic performance and clinical utility. *Frontiers in Oral Health,* 7, 1748450.

Helmons, P. J., Suijkerbuijk, B. O., Nannan Panday, P. V., & Kosterink, J. G. (2015). Drug-drug interaction checking assisted by clinical decision support: a return on investment analysis. *Journal of the American Medical Informatics Association*, 22 (4): 764-772.

Hidayat, R., & Hermanto, B. (2020). *A preliminary implementation of HL7 FHIR to achieve interoperability in Indonesia's local EHR*. In Proceedings of the 2020 International Conference on Information Management and Technology (ICIMTech) (pp. 412-417). IEEE.

Hospital Management Asia. (2025). *Snapshot of EMR progress in ASEAN*. Hospital Management Asia.

Hotelling, H. (1931) The Generalization of Student’s Ratio. *Ann. Math. Statist.* 2(3):360–378

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277-1288.

Huang, H., Zheng, O., Wang, D., Yin, J., Wang, Z., Ding, S., ... dan Liu, Y. (2023). ChatGPT for Shaping the Future of Dentistry: The Potential of Multi-Modal Large Language Model. *International Journal of Oral Science*, 15(1), 29.

Huang, J., Li, K., and Yehdego, D. (2024). *Evaluating Large Language Model (LLM) systems: Metrics, challenges, and best practices*. Medium - Data Science at Microsoft. Available at: https://medium.com/data-science-at-

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

microsoft/evaluating-llm-systems-metrics-challenges-and-best-practices . (Diakses 27 Desember 2025).

Huang, S., Dong, L., Wang, W., Hao, Y., Singhal, S., Ma, S., Lv, T., Cui, L., Mohammed, O. K., Patra, B., Liu, Q., Aggarwal, K., Chi, Z., Bjorck, J., Chaudhary, V., Som, S., Song, X., & Wei, F. (2023). Language Is Not All You Need: Aligning Perception with Language Models. *ArXiv*. /abs/2302.14045

Huyen, C. (2023). *Multimodality and Large Multimodal Models (LMMs)*. Tersedia Pada: https://huyenchip.com/2023/10/10/multimodal.html . (Diakses 15 April 2025).

Iacob, M., Qawas, A., Balasubramaniam, R., Frydrych, A.M. & Kujan, O. (2026). Evaluating LLMs for Diagnostic Accuracy and Health Information Quality in Oral Mucosal Diseases. *Journal of Personalized Medicine,* 16(3), 129.

IBM. (2024). *What are recurrent neural networks?*. Tersedia Pada: https://www.ibm.com/topics/recurrent-neural-networks . (Diakses 4 Mei 2025).

International Organization for Standardization. (2022). *ISO 27001:2022 Information Security Management Systems*. ISO. Tersedia pada: https://www.iso.org/standard/27001

Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice. *Field Methods*, 18(1), 3-20.

Jain, R.K., Chatterjee, A., Tiwari, A.K. dan Kumar, S. (2023). Artificial intelligence in orthodontics: A comprehensive review, *Orthodontic Waves*, 82(1), pp. 1-12.

Jeong, H., Han, S. S., Kim, K. E., Park, I. S., Choi, Y., & Jeon, K. J. (2023). Korean dental hygiene students' perceptions and attitudes toward artificial intelligence: An online survey. *Journal of dental education*, 87(6), 804–812.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Ji, Z., Lee, N., Frieske, R., Yu, T., Su, D., Xu, Y., Ishii, E., Bang, Y.J., Madotto, A. dan Fung, P. (2023). Survey of Hallucination in Natural Language Generation, *ACM Computing Surveys*, 55(12), pp. 1-38.

Jia, P., Zhang, L., Chen, J., Zhao, P., & Zhang, M. (2016). The Effects of Clinical Decision Support Systems on Medication Safety: An Overview. *PloS one*, 11(12), e0167683.

Jiang, A.Q., Sablayrolles, A., Mensch, A., Bamford, C., Chaplot, D.S., de las Casas, D., Bressand, F., Lengyel, G., Lample, G., Saulnier, L., Lavaud, L.R., Lachaux, M., Stock, P., Le Scao, T., Lavril, T., Wang, T., Lacroix, T. dan El Sayed, W. (2023). Mistral 7B, *arXiv preprint arXiv:2310.06825*.

Jiang, Y., Qiu, B., Xu, C., & Li, C. (2017). The Research of Clinical Decision Support System Based on Three-Layer Knowledge Base Model. *Journal of Healthcare Engineering*, 2017.

Jin, Q., Chen, F., Zhou, Y., Xu, Z., Cheung, J. M., Chen, R., Summers, R. M., Rousseau, J. F., Ni, P., Landsman, M. J., Baxter, S. L., Al'Aref, S. J., Li, Y., Chen, A., Brejt, J. A., Chiang, M. F., Peng, Y., & Lu, Z. (2024). Hidden flaws behind expert-level accuracy of multimodal GPT-4 vision in medicine. *NPJ digital medicine*, 7(1), 190.

Jones, C., Thornton, J., & Wyatt, J. C. (2022). Artificial intelligence and clinical decision support: Clinicians' perspectives on trust, trustworthiness, and liability. *Medical Law Review*, 31 (4): 501-520.

Kaczmarczyk, R., Wilhelm, T. I., Martin, R., & Roos, J. (2024). Evaluating multimodal AI in medical diagnostics. *NPJ digital medicine*, 7(1), 205.

Kahan, B. C., Cro, S., Doré, C. J., Bratton, D. J., Rehal, S., Maskell, N. A., Rahman, N., & Jairath, V. (2014). Reducing bias in open-label trials where blinded outcome assessment is not feasible: strategies from two randomised trials. *Trials*, 15, 456.

Kahan, B.C., Dore, C.J., Murphy, M.F., Jairath, V. (2016). Bias was reduced in an open-label trial through the removal of subjective elements from the outcome definition, *Journal of Clinical Epidemiology*, 77, pp. 38-43.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Kang, M., Ragan, B.G. dan Park, J.H. (2008). Issues in outcomes research: an overview of randomization techniques for clinical trials. *Journal of Athletic Training,* 43(2), 215–221.

Kaplan, J., McCandlish, S., Henighan, T., et al. (2020). Scaling laws for neural language models. *arXiv preprint arXiv:2001.08361*.

Karan-Romero, M., Salazar-Gamarra, R. E., & Leon-Rios, X. A. (2023). Evaluation of Attitudes and Perceptions in Students about the Use of Artificial Intelligence in Dentistry. *Dentistry Journal*, 11(5), 125.

Kawamoto, K., Houlihan, C. A., Balas, E. A., & Lobach, D. F. (2005). Improving clinical practice using clinical decision support systems: A systematic review of trials to identify features critical to success. *BMJ*, 330(7494), 765.

Kementerian Kesehatan Republik Indonesia, (2023). *Standar Tindakan dengan Terminologi ICD-9*. Tersedia Pada: https://satusehat.kemkes.go.id/platform/docs/id/terminology/icd/icd-9-cm/ . (Diakses 12 April 2025).

Kementerian Kesehatan Republik Indonesia. (2008). *Peraturan Menteri Kesehatan Nomor 269/MENKES/PER/III/2008 tentang Rekam Medis*. Jakarta: KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2012). *Peraturan Menteri Kesehatan Nomor 001 Tahun 2012 tentang Sistem Rujukan Pelayanan Kesehatan Perorangan*. KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2012). *Peraturan Menteri Kesehatan Nomor 1 tahun 2012 tentang sistem rujukan pelayanan kesehatan perorangan.* KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2013). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 71 Tahun 2013 tentang Pelayanan Kesehatan pada Jaminan Kesehatan Nasional*. KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2014). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 5 Tahun 2014 tentang Panduan*

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Praktik Klinis bagi Dokter di Fasilitas Pelayanan Kesehatan Primer. KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2015). *Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.02.02/MENKES/62/2015 tentang Panduan Praktik Klinis bagi Dokter Gigi*. KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2018). *Riset Kesehatan Dasar (Riskesdas) 2018*. Badan Penelitian dan Pengembangan Kesehatan, KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2020). *Peraturan Menteri Kesehatan Nomor 3 tahun 2020 tentang klasifikasi dan perizinan rumah sakit.* KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2022). *Peraturan Menteri Kesehatan Nomor 15 tahun 2022 tentang pedoman penggunaan dana dekonsentrasi Kementerian kesehatan tahun anggaran 2022.* KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2022). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 13 Tahun 2022 tentang Perubahan Atas Peraturan Menteri Kesehatan Nomor 21 Tahun 2020 tentang Rencana Strategis Kementerian Kesehatan Tahun 2020-2024*. KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2022). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 24 Tahun 2022 tentang Rekam Medis*. Jakarta: Kementerian Kesehatan Republik Indonesia.

Kementerian Kesehatan Republik Indonesia. (2022). *Transformasi Sistem Kesehatan Indonesia*. Jakarta: Kementerian Kesehatan RI.

Kementerian Kesehatan Republik Indonesia. (2023). *Enam Pilar Transformasi Kesehatan*. Tersedia Pada: https://p2p.kemkes.go.id/6-pilar-transformasi-kesehatan/ . (Diakses 19 Mei 2024).

Kementerian Kesehatan Republik Indonesia. (2023). *Mengenal SATUSEHAT*. Tersedia Pada:

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

https://satusehat.kemkes.go.id/platform/docs/id/terminology/ (Diakses 12 April 2025).

Kementerian Kesehatan Republik Indonesia. (2023). *Peraturan Turunan UU Kesehatan Atur Soal Penyelenggaraan Kesehatan Melalui Telekesehatan dan Telemedisin*. Tersedia Pada: https://sehatnegeriku.kemkes.go.id/baca/rilis-media/20230921/3143904/peraturan-turunan-uu-kesehatan-atur-soal-penyelenggaraan-kesehatan-melalui-telekesehatan-dan-telemedisin/ . (Diakses 12 April 2025).

Kementerian Kesehatan Republik Indonesia. (2023). *SATUSEHAT: Platform Indonesia Health Services*. Jakarta: Kementerian Kesehatan Republik Indonesia. Tersedia pada: https://satusehat.kemkes.go.id/

Kementerian Kesehatan Republik Indonesia. (2023). *Survei Kesehatan Indonesia (SKI) 2023: BAB 7 Kesehatan Gigi dan Mulut*. Badan Kebijakan Pembangunan Kesehatan, KEMENKES RI.

Kementerian Kesehatan Republik Indonesia. (2024). *Monitoring Implementasi SATUSEHAT Seluruh Indonesia*. Jakarta: KEMENKES RI. Tersedia pada: https://satusehat.kemkes.go.id/data/dashboard/

Kementerian Kesehatan RI. (2018). *Laporan Nasional Riskesdas 2018*. In Badan Penelitian dan Pengembangan Kesehatan. Lembaga Penerbit Badan Penelitian dan Pengembangan Kesehatan.

Kementerian Kesehatan RI. (2022). *Profil Kesehatan Indonesia 2021*. Jakarta: Kementerian Kesehatan Republik Indonesia.

Kementerian Kesehatan RI. (2026). Konferensi Nasional *"Towards a Safe, Equitable, and Accountable Future of AI-Health Ecosystem in Indonesia"*. Jakarta: 8-9 Juni 2026. Tersedia di: https://www.youtube.com/watch?v=7SlkC4LD5ok. (Diakses pada 14 Juni 2026).

Kementerian Komunikasi dan Digital Republik Indonesia. (2025). *Indonesia Susun Roadmap AI Nasional, Target Jadi Pemimpin Digital Asia*. Komdigi.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Kerby, D. S. (2014). The Simple Difference Formula: An Approach to Teaching Nonparametric Correlation. *Comprehensive Psychology*, 3, 11.

Kernebeck, S., Busse, T. S., Jux, C., Bork, U., & Ehlers, J. P. (2021). Electronic Medical Records for (Visceral) Medicine: An Overview of the Current Status and Prospects. *Visceral medicine*, 37(6), 476–481.

Khalifa, M., & Zabani, I. (2016). Utilizing Health Analytics in Improving the Performance of Healthcare Services: A Case Study on a Tertiary Care Hospital. *Journal of Infection and Public Health*, 9(6), 757-765.

Khanna S. (2010). Artificial intelligence: contemporary applications and future compass. *International dental journal*, 60(4), 269–272.

Khowaja, A. A., Bhart, T., Daniyal, R. M., Awan, N., Abbasi, A., & Mehdi, H. (2025). Comparing artificial intelligence and human intelligence in diagnosing oral lesions. *Pakistan Journal of Pathology*, 36(3), 245–251.

Kirnbauer, B., Hadzic, A., Jakse, N., Bischof, H., & Stern, D. (2022). Automatic detection of periapical osteolytic lesions on cone-beam computed tomography using deep convolutional neuronal networks. *Journal of Endodontics*, 48(11), 1434–1440.

Kizilcec, R.F., Shung, D. dan Sung, J.J.Y. (2024). Human-Machine Interaction: AI-Assisted Medicine Instead of AI-Driven Medicine. In: *Artificial Intelligence in Medicine* (pp. 139-149). Amsterdam: Elsevier.

Kolegium Dokter Gigi Indonesia. (2024). *Keputusan Konsil tentang Standar Profesi Dokter Gigi Indonesia dan Pedoman Penerbitan Sertifikat Kompetensi Dokter Gigi*. KDGI.

KOMINFO. (2023). *Sekjen Kominfo: Penggunaan AI Harus Sesuai dengan Nilai Etika di Indonesia*. Tersedia Pada: https://aptika.kominfo.go.id/2023/11/sekjen-kominfo-penggunaan-ai-harus-sesuai-dengan-nilai-etika-di-indonesia/

Konsil Kedokteran Indonesia. (2015). *Standar Kompetensi Dokter Gigi Indonesia*. Konsil Kedokteran Indonesia.

Konsil Kedokteran Indonesia. (2024). *Standar Kompetensi Dokter Gigi Indonesia (SKDGI)*. KKI.

Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Konsil Kedokteran Indonesia. (2024). *Uji Kompetensi Mahasiswa Program Profesi Dokter Gigi (UKMP2DG)*. Jakarta: Konsil Kedokteran Indonesia.

Koto, F. (2025). *Cracking the Code: Multi-domain LLM Evaluation on Real-World Professional Exams in Indonesia*, in Proceedings of the 2025 Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics: Human Language Technologies (Volume 3: Industry Track). Albuquerque, New Mexico: Association for Computational Linguistics, pp. 938–948.

Krueger, R. A., & Casey, M. A. (2015). *Focus groups: A practical guide for applied research* (5th ed.). SAGE Publications.

Kumar, A. (2024). AI-Powered Cyber Defence: Safeguarding Medical IoT and Electronic Health Records with Intelligent Security Architectures, *Shodhshauryam, International Scientific Refereed Research Journal*, 7(5), pp. 310–314.

Kung, T.H., Cheatham, M., Medenilla, A., Sillos, C., De Leon, L., Elepaño, C., Madriaga, M., Aggabao, R., Diaz-Candido, G., Maningo, J. dan Tseng, V. (2023). Performance of ChatGPT on USMLE: Potential for AI-assisted medical education using large language models, *PLOS Digital Health*, 2(2), e0000198.

Kunhimangalam, R., Ovallath, S., & Joseph, P. K. (2014). A clinical decision support system with an integrated EMR for diagnosis of peripheral neuropathy. *Journal of medical systems*, 38 (4): 38.

Kusumadewi, S. dan Miladiyah, I. (2023). Do clinical decision support systems for prescribing improve patient safety? a systematic literature review, *Indonesian Journal of Electrical Engineering and Computer Science*, 30(3), pp. 1748–1761.

Lee, G., Latif, E., Shi, L., & Zhai, X. (2023). Gemini Pro Defeated by GPT-4V: Evidence from Education. *ArXiv*. /abs/2401.08660

Lestariningati, S.I. (2020). Digital Signature Implementation for Electronic Health Record in Indonesia, *IOP Conference Series: Materials Science and Engineering*, 879(1), 012067.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Li, C., Wong, C., Zhang, S., Usuyama, N., Liu, H., Yang, J., Naumann, T., Poon, H., & Gao, J. (2023). LLAVA-MeD: Training a large Language-and-Vision assistant for biomedicine in one day. *arXiv (Cornell University)*.

Li, H., Ding, L., Fang, M. and Tao, D. (2024). Revisiting catastrophic forgetting in large language model tuning, in Al-Onaizan, Y., Bansal, M. and Chen, Y.-N. (eds.) *Findings of the Association for Computational Linguistics: EMNLP 2024*. Miami, Florida, USA: Association for Computational Linguistics, pp. 4297–4308.

Li, J., Deng, Y., Sun, Q., Zhu, J., Tian, Y., Li, J., & Zhu, T. (2025). Benchmarking Large Language Models in Evidence-Based Medicine*. IEEE journal of biomedical and health informatics*, 29(9), 6143–6156.

Li, Junnan, Dongxu Li, Caiming Xiong, and Steven Hoi. (2022). *Blip: Bootstrapping language-image pre-training for unified vision-language understanding and generation*. In International conference on machine learning, pp. 12888–12900.

Liesenfeld, A., Lopez, A. dan Dingemanse, M. (2023). Opening up ChatGPT: Tracking openness, transparency, and accountability in instruction-tuned text generators, *Proceedings of the 5th International Conference on Conversational User Interfaces*.

Lin, J., Tang, J., Tang, H., Yang, S., Dang, X., & Han, S. (2024). *AWQ: Activation-aware Weight Quantization for LLM Compression and Acceleration*. Proceedings of Machine Learning and Systems, 6, 87-100.

Lin, L., Tang, B., Cao, L., Yan, J., Zhao, T., Hua, F., & He, H. (2023). The knowledge, experience, and attitude on artificial intelligence-assisted cephalometric analysis: Survey of orthodontists and orthodontic students. *American Journal of Orthodontics and Dentofacial Orthopedics*, 164(4), e97-e105.

Liu, F., Niu, Y., Zhang, Q., Wang, K., Dong, Z., Wong, I. N., Cheng, L., Li, T., Duan, L., Li, K., Li, G., Hou, T. W., Fok, M., Luo, H., Chen, X., Zhang, K., & Yin, Y. (2025). A foundational architecture for AI agents in healthcare. *Cell reports. Medicine*, 6(10), 102374.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Liu, F., Zhu, T., Wu, X., Yang, B., You, C., Wang, C., Lu, L., Liu, Z., Zheng, Y., Sun, X., Yang, Y., Clifton, L., & Clifton, D. A. (2023). A medical multimodal large language model for future pandemics. *Npj Digital Medicine*, 6 (1): 1-15.

Liu, H., Li, C., Wu, Q., & Lee, Y. J. (2024). Visual instruction tuning. *Advances in Neural Information Processing Systems*, 36. (LLaVA)

Liu, M., Okuhara, T., Dai, Z., Huang, W., Gu, L., Okada, H., Furukawa, E. and Kiuchi, T. (2025). Evaluating the Effectiveness of advanced large language models in medical Knowledge: A Comparative study using Japanese national medical examination. *International Journal of Medical Informatics*, 193, 105673.

Liu, M., Okuhara, T., Dai, Z., Huang, W., Gu, L., Okada, H. dan Kiuchi, T. (2026). Textbook-level medical knowledge in large language models: comparative evaluation using Japanese National Medical Examination. *BMC Medical Informatics and Decision Making*, 26, 65

LocalLLM Community. (2025). *Running Large Language Models Locally: Best Practices and Performance Optimization*. GitHub. Tersedia pada: https://github.com/localllm/documentation

Lu, M.Y., Chen, B., Williamson, D.F.K., Chen, R.J., Zhao, M., Chow, A.K., Ikemura, K., Kim, A., Pouli, D., Patel, A., & Mahmood, F. (2024). A multimodal generative AI copilot for human pathology. *Nature*, 634, 466-473.

Luo, F. (2024). *Vision-Language models for robot success detection*. Proceedings of the AAAI Conference on Artificial Intelligence, 38(21), 23750–23752.

Mallineni, S.K., Sethi, M., Nuvvula, S., Veerabhadrudu, V., Aldhuwayhi, S., Alzahrani, F.A., ... dan Robaian, A. (2024). Artificial Intelligence in Dentistry: A Descriptive Review. *Bioengineering*, 11(12), 1267.

Mallishery, S., Chhatpar, P., Banga, K. S., Shah, T., & Gupta, P. (2020). The precision of case difficulty and referral decisions: an innovative automated approach. *Clinical oral investigations*, 24(6), 1909–1915.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample Size in Qualitative Interview Studies: Guided by Information Power. *Qualitative Health Research*, 26(13), 1753-1760.

Mamun, M.S. and Shaik, M.S. (2020). Security of Medical Data using Hybrid Cryptography (AES and RSA), *International Journal of Computer Trends and Technology*, 68(4), pp. 58-63.

Martinez-Franco, A. I., Sanchez-Mendiola, M., Mazon-Ramirez, J. J., Hernandez-Torres, I., Rivero-Lopez, C., Spicer, T., & Martinez-Gonzalez, A. (2018). Diagnostic accuracy in Family Medicine residents using a clinical decision support system (DXplain): a randomized-controlled trial. *Diagnosis (Berlin, Germany)*, 5 (2): 71–76.

Mashayekhi, M., Ahmadi Majd, S., Ferdowsi, S., Asgarinejad, M., Bagherzadeh Mohasefi, J dan Shokouhian Rad, H. (2025). Clinical Semantic Intelligence (CSI): Emulating the Cognitive Framework of the Expert Clinician for Comprehensive Oral Disease Diagnosis. *arXiv [Preprint]*.

Maviglia, S. M., Kuperman, G. J., & Middleton, B. (2005). *Hospital information systems. Hospital Medicine*. Philadelphia: Lippincott Williams & Williams.

McCambridge, J., Witton, J., & Elbourne, D. R. (2014). Systematic review of the Hawthorne effect: new concepts are needed to study research participation effects. Journal of clinical epidemiology, 67(3), 267–277.

McHugh, M. L. (2013). The Chi-square Test of Independence. *Biochemia Medica*, 23(2), 143-149.

McKinsey. (2017). *McKinsey Global Institute Artificial Intelligence the Next Digital Frontier?* Tersedia Pada: www.mckinsey.com/mgi

Meer, R.M., Alqarni, A., Akily, B.M., Zaki, H. & Fayad, M.I. dkk. (2026). AI-Powered Clinical Decision Support in Dentistry: Comparative Evaluation of LLMs for Oral Medicine and Periodontal Diagnosis. *Medical Science Monitor,* 32, e951721.

Menz, B. D., Kuderer, N. M., Bacchi, S., Modi, N. D., Chin-Yee, B., Hu, T., Rickard, C., Haseloff, M., Vitry, A., McKinnon, R. A., Kichenadasse, G., Rowland, A., Sorich, M. J., & Hopkins, A. M. (2024). Current safeguards,

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

risk mitigation, and transparency measures of large language models against the generation of health disinformation: repeated cross-sectional analysis. *BMJ*, e078538.

Meta AI. (2024). *Llama 3.2: Multimodal Large Language Models*. Meta. Tersedia pada: https://ai.meta.com/blog/llama-3-2-connect-2024-vision-edge-mobile-devices/

Meta AI. (2024). *Llama 3: Open foundation and instruction-tuned language models*. Tersedia pada: https://llama.meta.com/

Miller, G. E. (1990). The assessment of clinical skills/competence/performance. *Academic Medicine*, 65(9), S63-S67.

Minaee, S., Mikolov, T., Nikzad, N., Chenaghlu, M., Socher, R., Amatriain, X., & Gao, J. (2024). Large Language Models: A Survey. *arXiv preprint arXiv:2402.06196*.

Mistral AI. (2024). *Mistral: Frontier AI in your hands*. Tersedia pada: https://mistral.ai/

Mistral AI. (2025). *Mistral small 3.2: Efficient language model*. Tersedia pada: https://mistral.ai/models

Moazemi, S., Vahdati, S., Li, J., Kalkhoff, S., Castano, L. J. V., Dewitz, B., Bibo, R., Sabouniaghdam, P., Tootooni, M. S., Bundschuh, R. A., Lichtenberg, A., Aubin, H., & Schmid, F. (2023). Artificial intelligence for clinical decision support for monitoring patients in cardiovascular ICUs: A systematic review. *Frontiers in medicine*, 10, 1109411.

Mohammad-Rahimi, H., Khoury, Z. H., Alamdari, M. I., Rokhshad, R., Motie, P., Parsa, A., Tavares, T., Sciubba, J. J., Price, J. B., & Sultan, A. S. (2024). Performance of AI chatbots on controversial topics in oral medicine, pathology, and radiology. *Oral surgery, oral medicine, oral pathology and oral radiology*, 137(5), 508–514.

Moor, M., Banerjee, O., Abad, Z. S. H., Krber, H. M., Katabi, D., & Topol, E. J. (2023). Foundation models for generalist medical artificial intelligence. *Nature*, 616(7956), 259-265.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Mosqueira-Rey, E., Hernández-Pereira, E., Alonso-Ríos, D., Bobes-Bascarán, J. dan Fernández-Leal, A. (2023). Human-in-the-loop machine learning: A state of the art, *Artificial Intelligence Review*, 56(4), pp. 3005-3054.

Muchlis, H. A. (2024). Model sukses implementasi rekam medis elektronik di Puskesmas Jakarta. *Indonesian of Health Information Management Journal (INOHIM)*, 12(1), 31–41.

Murali, S., Bagewadi, A., S, L. K., Fernandes, A., T, J., Panwar, A., & Keluskar, V. (2023). Knowledge, attitude, and perception of dentists regarding the role of Artificial Intelligence and its applications in Oral Medicine and Radiology: a cross-sectional study. *Journal of Oral Medicine and Oral Surgery*, 29(2), 22.

Nakatsui, M., Hirano, Y., Kashibe, K., Kawamura, C., Abe, T., Hamada, K., Arima, H., Toyota, K., Harada, H., Kouda, K., Nishinaka, Y., Ishida, H., & Asai, Y. (2025). Development and Update of CDSS-AI Integration Framework for Introducing Medical AI into Clinical Practice. *Studies in health technology and informatics*, 329, 1662–1663.

Naliyatthaliyazchayil, P., Muthyala, R., Gichoya, J. W., & Purkayastha, S. (2025). Evaluating the Reasoning Capabilities of Large Language Models for Medical Coding and Hospital Readmission Risk Stratification: Zero-Shot Prompting Approach. *Journal of medical Internet research*, 27, e74142.

Nguyen, H.C., Dang, H.P., Nguyen, T.L., Hoang, V. & Nguyen, V.A. (2025). Accuracy of latest large language models in answering multiple choice questions in dentistry: A comparative study. *PLoS ONE,* 20(1), e0317423.

Nori, H., King, N., McKinney, S. M., Carignan, D., & Horvitz, E. (2023). Capabilities of GPT-4 on Medical Challenge Problems. *arXiv preprint arXiv:2303.13375*.

NVIDIA. (2024). *TensorRT-LLM: High-Performance Large Language Model Inference*. NVIDIA Developer. Tersedia pada: https://developer.nvidia.com/tensorrt

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

NVZA. (2015). *Workgroup Clinical Rules of the Dutch Association of Hospital Pharmacists (NVZA). Questionnaire on current state of clinical rule implementation in hospital pharmacy*.

Ollama (2024). *Ollama: Get up and running with large language models locally*. Tersedia pada: https://ollama.com/ (Diakses: 15 November 2025).

Ollama. (2024). *Ollama Documentation: Running Large Language Models Locally*. Tersedia pada: https://ollama.ai/docs (Diakses: 15 November 2025).

Olson, C. L. (1974). Comparative Robustness of Six Tests in Multivariate Analysis of Variance. *Journal of the American Statistical Association*, 69(348), 894-908.

OpenAI. (2024). *Enhancements and capabilities of GPT-4o in multimodal AI interaction*, OpenAI Blog. Tersedia Pada: https://openai.com/blog/gpt-4o-enhancements/ (Diakses: 20 Mei 2024).

OpenAI. (2024). GPT-4 Technical Report. *arXiv preprint arXiv:2303.08774*.

OpenAI. (2024). *GPT-4o system card*. Tersedia pada: https://openai.com/research/gpt-4o-system-card (Diakses: 15 November 2025).

OpenAI. (2024). *Tokenizer Documentation*. Tersedia pada: https://platform.openai.com/tokenizer (Diakses: 15 November 2025).

OpenAI. (2025). *OpenAI API Pricing*. Tersedia pada: https://openai.com/api/pricing (Diakses: 15 November 2025).

OpenWebUI. (2024). *Open WebUI: User-friendly WebUI for LLMs*. Tersedia pada: https://openwebui.com/ (Diakses: 15 November 2025).

OpenWebUI. (2025). *Open WebUI: User-friendly interface for LLMs.* https://openwebui.com (Diakses: 15 November 2025)

Osheroff, J.A., Teich, J.M., Middleton, B., Steen, E.B., Wright, A. dan Detmer, D.E. (2007). A Roadmap for National Action on Clinical Decision Support. *Journal of the American Medical Informatics Association*, 14(2), 141-145.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Panitia Nasional UKMPPD. (2025). *Pedoman Pelaksanaan Uji Kompetensi Mahasiswa Program Profesi Dokter dan Dokter Gigi*. Kemdikbudristek.

Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods: Integrating Theory and Practice* (4th ed.). SAGE Publications.

Paul F Christiano, Jan Leike, Tom Brown, Miljan Martic, Shane Legg, and Dario Amodei. (2017). Deep reinforcement learning from human preferences. *Advances in neural information processing systems*, 30.

Pengurus Besar Persatuan Dokter Gigi Indonesia. (2013). *Panduan Praktik Klinis Kedokteran Gigi*. Pengurus Besar Persatuan Dokter Gigi Indonesia.

Pengurus Besar Persatuan Dokter Gigi Indonesia. (2024). Data Anggota PDGI 2024. Persatuan Dokter Gigi Indonesia.

Peraturan Menteri Kesehatan Republik Indonesia Nomor 28 Tahun 2014 tentang Pedoman Pelaksanaan Program Jaminan Kesehatan. (2014). *KEMENKES RI*.

Persatuan Dokter Gigi Indonesia Cabang DIY. (2024). *Data anggota PDGI Daerah Istimewa Yogyakarta tahun 2024*. Yogyakarta: PDGI DIY.

Peterson, R. A., & Merunka, D. R. (2014). Convenience samples of college students and research reproducibility. *Journal of Business Research*, 67(5), 1035-1041.

Picker Wheel (2025). *Team Picker Wheel: Randomize a List of Names into Group.* Tersedia pada: https://pickerwheel.com/tools/random-team-generator/ (Diakses: 13 Oktober 2025)

Pocock, S. J., Assmann, S. E., Enos, L. E., & Kasten, L. E. (2002). Subgroup analysis, covariate adjustment and baseline comparisons in clinical trial reporting: current practice and problems. *Statistics in Medicine*, 21(19), 2917–2930.

Pratami, J.F., Sari, D.P., Rahmawati, A. dan Kusuma, W.D. (2022). *Uji Kompetensi Mahasiswa Program Profesi Dokter Gigi (UKMP2DG)*. Jakarta: Penerbit Buku Aksara. ISBN: 978-602-6711-27-4.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Presiden Republik Indonesia (2004). *Undang-Undang Nomor 29 tahun 2004 tentang praktik kedokteran*.

Presiden Republik Indonesia. (2012). *Peraturan Presiden Nomor 72 Tahun 2012 tentang sistem kesehatan nasional*.

Pusat Studi Pendidikan Kedokteran Gigi Masyarakat dan Kelompok Peminatan Asuransi Kesehatan. (2018). *Laporan Kajian Pengembangan Sistem Pembayaran Pelayanan Gigi dalam Program JKN KIS di Yogyakarta*. Fakultas Kedokteran Gigi Universitas Gadjah Mada.

Qazi, I.A., Ali, A., Khawaja, A.U., Akhtar, M.J., Sheikh, A.Z., & Alizai, M.H. (2025). Automation Bias in Large Language Model Assisted Diagnostic Reasoning Among AI-Trained Physicians. *NEJM AI.*

Qin, H., & Tong, Y. (2025). Opportunities and Challenges for Large Language Models in Primary Health Care. *Journal of Primary Care & Community Health*, 16, 21501319241312571.

Qwen Team, Alibaba Cloud. (2024). *Qwen2.5: A comprehensive language model series*. https://qwenlm.github.io. (Diakses: 19 November 2024).

Qwen Team. (2024). *Qwen2.5 Technical Report*. Alibaba Cloud. arXiv preprint arXiv:2412.15115. (Diakses: 15 November 2025).

Rachmawati, Y. L., Putri, A. H., Priyanto, R., Nabilah, K. C., Gani, A. D. S., & Mohd-Dom, T. N. (2025). Caries risk factors among Indonesian adults: insights from the national health survey. *Brazilian Oral Research*, 39, e025.

Ratner, B., 2009. The correlation coefficient: Its values range between +1/−1, or do they? *Journal of Targeting, Measurement and Analysis for Marketing*, 17(2), 139-142.

Rencher, A.C. (2002) *Methods of Multivariate Analysis*, 2nd ed., Wiley

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Republik Indonesia (2004) *Undang-Undang Nomor 40 Tahun 2004 tentang Sistem Jaminan Sosial Nasional*. Lembaran Negara Republik Indonesia Tahun 2004 Nomor 150.

Republik Indonesia (2011) *Undang-Undang Nomor 24 Tahun 2011 tentang Badan Penyelenggara Jaminan Sosial*. Lembaran Negara Republik Indonesia Tahun 2011 Nomor 116.

Republik Indonesia (2022) *Undang-Undang Nomor 27 Tahun 2022 tentang Pelindungan Data Pribadi*. Lembaran Negara Republik Indonesia Tahun 2022 Nomor 196.

Republik Indonesia (2023) *Undang-Undang Nomor 17 Tahun 2023 tentang Kesehatan*. Pemerintah Republik Indonesia.

Reyes, L. T., Knorst, J., Ortiz, Brondani, B., Emmanuelli, B., Guedes, R. S., Mendes, F., & Ardenghi, T. (2023). Early Childhood Predictors for Dental Caries: A Machine Learning approach. *Journal of Dental Research*, 102(9), 999–1006.

Rieke, N., Hancox, J., Li, W., Milletari, F., Roth, H.R., Albarqouni, S., Bakas, S., Galtier, M.N., Landman, B.A., Maier-Hein, K., Ourselin, S., Sheller, M., Summers, R.M., Trask, A., Xu, D., Baust, M. dan Cardoso, M.J. (2020) 'The future of digital health with federated learning', *npj Digital Medicine*, 3, 119.

Roller, M. R., & Lavrakas, P. J. (2015). *Applied Qualitative Research Design: A Total Quality Framework Approach*. Guilford Press.

Rydzewski, N. R., Dinakaran, D., Zhao, S. G., Ruppin, E., Turkbey, B., Citrin, D. E., & Patel, K. R. (2024). Comparative Evaluation of LLMs in Clinical Oncology. *NEJM AI*, 1(5).

Saab, K., Tu, T., Weng, W. H., Tanno, R., Stuber, D., Wulczyn, E., ... & Natarajan, V. (2024). *Capabilities of Gemini Models in Medicine*. arXiv preprint arXiv:2404.18416.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Samokisheva, V., Trifonov, R. and Pavlova, G. (2024) 'Risks and Challenges of Using Ai In Healthcare', *2024 12th International Scientific Conference on Computer Science (COMSCI)*. Sozopol, Bulgaria, pp. 1-4. (Diakses: 6 Juni 2025).

SATUSEHAT Platform (2024) *Panduan Integrasi SATUSEHAT: FHIR Resources dan API Documentation*, Kementerian Kesehatan Republik Indonesia. Tersedia Pada: https://satusehat.kemkes.go.id/platform/docs. (Diakses: 4 Maret 2025).

SATUSEHAT Platform (2024) *Terminologi*, Kementerian Kesehatan Republik Indonesia. Tersedia pada: https://satusehat.kemkes.go.id/platform/docs/terminology. (Diakses: 4 Maret 2025).

SATUSEHAT. (2024). *Monitoring Implementasi SATUSEHAT Seluruh Indonesia*. Tersedia Pada: https://satusehat.kemkes.go.id/data/dashboard/3678097d-d11e-4b2c-8552-310d782a905b. (Diakses: 4 Maret 2025).

Schleyer, T. K., Thyvalikakath, T. P., Spallek, H., Torres-Urquidy, M. H., Hernandez, P., & Yuhaniak, J. (2006). Clinical computing in general dentistry. *Journal of the American Medical Informatics Association : JAMIA*, 13(3), 344–352..

Schulz, K.F. dan Grimes, D.A. (2002). Generation of allocation sequences in randomised trials: chance, not choice. *The Lancet*, 359(9305), 515–519.

Schulz, K.F. dan Grimes, D.A. (2002). Allocation concealment in randomised trials: defending against deciphering. *The Lancet*, 359(9306), 614–618.

Schulz, K.F., Altman, D.G. and Moher, D. (2010) 'CONSORT 2010 Statement: Updated guidelines for reporting parallel group randomised trials', *BMJ*, 340, c332.

Scott, I., van der Vegt, A., dan Douglas, P. (2026). How can we prevent clinical deskilling when using AI?. *BMJ Quality & Safety.*

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Seonard, A.L. (2026). 'Strategi Pengawasan Berbasis AI untuk Menekan Fraud Layanan Kesehatan'. Dipresentasikan pada Webinar Nasional "*Memanfaatkan Artificial Intelligence untuk Pencegahan Fraud Penerima Manfaat BPJS Kesehatan*". Jakarta: Kementerian PAN-RB, [27 April 2026]. Tersedia di: https://www.youtube.com/watch?v=exOZoPwEOvI. (Diakses pada: 14 Juni 2026).

Setiaji, S. (2026). 'Integrasi Data Rekam Medis Elektronik dan AI dalam Pencegahan Kecurangan Klaim'. Dipresentasikan pada Webinar Nasional "*Memanfaatkan Artificial Intelligence untuk Pencegahan Fraud Penerima Manfaat BPJS Kesehatan*". Jakarta: Kementerian PAN-RB, 27 April 2026. Tersedia di: https://www.youtube.com/watch?v=exOZoPwEOvI. (Diakses pada: 14 Juni 2026).

Shan, T., Tay, F.R. dan Gu, L. (2021) 'Application of artificial intelligence in dentistry', *Journal of Dental Research*, 100(3), pp. 232-244.

Shortliffe, E.H., & Sepúlveda, M.J. (2018). Clinical decision support in the era of artificial intelligence. *JAMA*, 320(21), 2199-2200.

Siadari, T.S. (2026). 'Tantangan Etika dan Akuntabilitas dalam Implementasi AI-Health di Indonesia'. Konferensi Nasional "*Towards a Safe, Equitable, and Accountable Future of AI-Health Ecosystem in Indonesia*". Jakarta: Kementerian Kesehatan, 8-9 Juni 2026. Tersedia di: https://www.youtube.com/watch?v=7SlkC4LD5ok. (Diakses pada: 14 Juni 2026).

Sim, I., Gorman, P., Greenes, R. A., Haynes, R. B., Kaplan, B., Lehmann, H., & Tang, P. C. (2001). Clinical decision support systems for the practice of evidence-based medicine. *Journal of the American Medical Informatics Association*, 8(6), 527–534.

Simon, S. R., McCarthy, M. L., Kaushal, R., Jenter, C. A., Volk, L. A., Poon, E. G., Yee, K. C., Orav, E. J., Williams, D. H., & Bates, D. W. (2008). Electronic health records: which practices have them, and how are

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

clinicians using them?. *Journal of Evaluation in Clinical Practice*, 14(1): 43–47.

Singh, H., Meyer, A. N., & Thomas, E. J. (2014). The frequency of diagnostic errors in outpatient care: estimations from three large observational studies involving US adult populations. *BMJ Quality & Safety*, 23(9): 727–731.

Singh, N., Pandey, A., Tikku, A. P., Verma, P., & Singh, B. P. (2023). Attitude, perception and barriers of dental professionals towards artificial intelligence. *Journal of Oral Biology and Craniofacial Research*, 13(5), 584–588.

Singhal, K., Azizi, S., Tu, T., Mahdavi, S.S., Wei, J., Chung, H.W., Scales, N., Tanwani, A., Cole-Lewis, H., Pfohl, S., Payne, P., Seneviratne, M., Gamber, P., Kelly, C., Babiker, A., Schärli, N., Chowdhery, A., Mansfield, P., Demner-Fushman, D., Agüera y Arcas, B., Webster, D., Corrado, G.S., Matias, Y., Chou, K., Gottweis, J., Tomasev, N., Liu, Y., Rajkomar, A., Barral, J., Semturs, C., Krawczyk, A. dan Natarajan, V. (2023) 'Large language models encode clinical knowledge', *Nature*, 620, pp. 172-180.

Sittig, D.F. dan Singh, H. (2010). A New Socio-Technical Model for Studying Health Information Technology in Complex Adaptive Healthcare Systems. *Quality & Safety in Health Care*, 19(Suppl 3), i68-i74.

Song, E. S., Kim, G. H., & Lee, S. P. (2026). Evaluation of GPT-4o and Gemini Advanced on the Korean National Dental Licensing Examination: Accuracy, consistency, and question generation. *Journal of Dental Sciences*, 21(1), 96–102.

Sonoda, Y., Kurokawa, R., Nakamura, Y., Kanzawa, J., Kurokawa, M., Ohizumi, Y., Gonoi, W., & Abe, O. (2024). Diagnostic performances of GPT-4o, Claude 3 Opus, and Gemini 1.5 Pro in "Diagnosis Please" cases. *Japanese Journal of Radiology*, 42(11), 1231–1235.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Stanford Institute for Human-Centered Artificial Intelligence (HAI). (2024). *Artificial Intelligence Index Report 2024*. Stanford University. Tersedia pada: https://aiindex.stanford.edu/. (Diakses: 6 Mei 2024).

Strasberg, H. R., Rhodes, B., Del Fiol, G., Jenders, R. A., Haug, P. J., & Kawamoto, K. (2021). Contemporary clinical decision support standards using Health Level Seven International Fast Healthcare Interoperability Resources. *Journal of the American Medical Informatics Association : JAMIA*, 28(8), 1796–1806.

Sur, J., Bose, S., Khan, F., Dewangan, D., Sawriya, E., & Roul, A. (2020). Knowledge, attitudes, and perceptions regarding the future of artificial intelligence in oral radiology in India: A survey. *Imaging Science in Dentistry*, 50(3), 193.

Surdu, S., Mertz, E., Langelier, M., & Moore, J. (2021). Dental Workforce Trends: A National Study of Gender Diversity and Practice Patterns. *Medical Care Research and Review*, 78(1), 114-126.

Sutton, R.T., Pincock, D., Baumgart, D.C., Sadowski, D.C., Fedorak, R.N. dan Kroeker, K.I. (2020). An Overview of Clinical Decision Support Systems: Benefits, Risks, and Strategies for Success. *npj Digital Medicine*, 3, 17.

Tabachnick, B.G. dan Fidell, L.S. (2019) *Using Multivariate Statistics*. 7th ed. Boston: Pearson.

Thanathornwong, B., Suebnukarn, S., & Ouivirach, K. (2023). Clinical Decision Support System for Geriatric Dental Treatment Using a Bayesian Network and a Convolutional Neural Network. *Healthcare Informatics Research*, 29 (1): 23-30.

Thelwall, M., Bailey, C., Tobin, C and Bradshaw, N.A. (2019) ‘Gender differences in research areas, methods and topics: Can people and thing orientations explain the results?’, *Journal of Informetrics*, 13(1), pp. 149–169.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Thirunavukarasu, A. J., Ting, D. S. J., Elangovan, K., Gutierrez, L., Tan, T. F., & Ting, D. S. W. (2023). Large language models in medicine. *Nature Medicine*, 29(8), 1930-1940.

Tokgöz Kaplan, T. & Erdinç Akyol, G. (2026). The role of large language models in dental diagnosis, decision-making, and communication: A systematic review. *Journal of Dental Sciences Review,* 62, 57–67.

Tomczak, M. dan Tomczak, E. (2014) The need to report effect size estimates revisited. An overview of some recommended measures of effect size. *Trends in Sport Sciences*, 21(1), pp. 19-25.

Topol, E.J. (2019) *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. New York: Basic Books.

Touvron, H., Martin, L., Stone, K., Albert, P., Almahairi, A., Babaei, Y., ... & Scialom, T. (2023). *Llama 2: Open Foundation and Fine-Tuned Chat Models*. arXiv preprint arXiv:2307.09288. (Diakses: 4 Maret 2025).

Tschandl, P., Rinner, C., Apalla, Z., Argenziano, G., Codella, N., Halpern, A., Janda, M., Lallas, A., Longo, C., Malvehy, J., Paoli, J., Puig, S., Rosendahl, C., Soyer, H.P., Zalaudek, I. dan Kittler, H. (2020) 'Human-computer collaboration for skin cancer recognition', *Nature Medicine*, 26, pp. 1229-1234.

Tumbelaka, A.R. (2016). Clinical Guidelines (Pedoman Pelayanan Klinis/Medis). *Sari Pediatri*, 4(4): 204-206.

Tussie, C. dan Starosta, A. (2024) 'Comparing the dental knowledge of large language models', *Research Square*. (Diakses: 10 April 2025).

Uppalapati, S.R., Jovanovic, M., Engel, M., Patel, S. dan Popescu, A. (2024). A Comparative Analysis of AI Models in Complex Medical Decision-Making Scenarios: Evaluating ChatGPT, Claude AI, Bard, and Perplexity. *Cureus*, 16(2), e54616.

UNIVERSITAS GADJAH MADA
Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem Rujukan Kesehatan Gigi dan Mulut
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A.N., Kaiser, Ł., & Polosukhin, I. (2017). Attention is all you need. *Advances in Neural Information Processing Systems*, 30, 5998-6008.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157-178.

Viana, P. C., Correia, A., Lopes, I., Kovacs, Z., Eustaquio, L. (2014). *Gingiva Assessment Tool—a clinical decision support system to evaluate the esthetic risk for gingiva-shade ceramics in a fixed dental prosthesis*. In CRC Press eBooks pp. 185–188.

Vishwanath, K., Ghosh, M., Alyakin, A., Alber, D.A., Aphinyanaphongs, Y. & Oermann, E.K. (2026). General-purpose large language models outperform specialized clinical AI tools on medical benchmarks. *Nature Medicine.*

Voigt, P. dan Von dem Bussche, A. (2017) *The EU General Data Protection Regulation (GDPR): A Practical Guide*. Cham: Springer International Publishing.

Wang, D., Wang, L., Zhang, Z., Wang, D., Zhu, H., Gao, Y., ... dan Ding, X. (2021). "Brilliant AI Doctor" in Rural Clinics: Challenges in AI-Powered Clinical Decision Support System Deployment. In: *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (pp. 1-18). New York: ACM.

Wang, R., Mi, F., Chen, Y., Xue, B., Wang, H., Zhu, Q., Wong, K. F. and Xu, R. (2024) 'Role Prompting Guided Domain Adaptation with General Capability Preserve for Large Language Models', *arXiv preprint arXiv:2403.02756* . (Diakses: 10 Juli 2025).

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Wang, W., Bao, H., Dong, L., Bjorck, J., Peng, Z., Liu, Q., Aggarwal, K., Mohammed, O. K., Singhal, S., Som, S., & Wei, F. (2022). *Image as a Foreign Language: BEIT Pretraining for all Vision and Vision-Language tasks*. arXiv (Cornell University) . (Diakses: 10 Juli 2025).

Wardani, E., Putra, D.H., Sonia, D. dan Yulia, N., 2024. Keamanan Sistem Informasi Rekam Medis Elektronik di Rumah Sakit Islam Jakarta Sukapura. *Jurnal Rekam Medik & Manajemen Informasi Kesehatan*, 1(2), pp.94-103.

Wasylewicz, A. T. M., & Scheepers-Hoeks, A. M. J. W. (2018). Clinical Decision Support Systems. In P. Kubben (Eds.) et. al., *Fundamentals of Clinical Data Science*. pp. 153–169. Springer.

Wei, J., Bosma, M., Zhao, V.Y., Guu, K., Yu, A.W., Lester, B., Du, N., Dai, A.M. dan Le, Q.V., 2022. Finetuned Language Models Are Zero-Shot Learners. Dalam: *International Conference on Learning Representations (ICLR 2022)*. Virtual Event, 25-29 April 2022.

World Health Organization. (2019). *International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10)*. WHO. https://icd.who.int/browse10/. (Diakses: 14 Agustus 2024).

World Health Organization. (2021). *Ethics and Governance of Artificial Intelligence for Health: WHO Guidance*. World Health Organization. ISBN: 978-92-4-002920-0

World Health Organization. (2022). *Global Oral Health Status Report: Towards Universal Health Coverage for Oral Health by 2030*. World Health Organization.

World Health Organization. (2024). *Ethics and Governance of Artificial Intelligence for Health: Guidance on Large Multi-modal Models*. World Health Organization. ISBN: 978-92-4-008475-9

World Health Organization. (2024). *Regulatory Considerations on Artificial Intelligence for Health*. World Health Organization.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*, 310(20), 2191-2194.

Witheridge, A., Ferns, G., & Scott-Smith, W. (2019). Revisiting Miller's pyramid in medical education: the gap between traditional assessment and diagnostic reasoning. *International journal of medical education*, 10, 191–192.

xAI. (2024). *Grok: A large language model by xAI*. Tersedia pada: https://x.ai/. (Diakses: 12 Januari 2025).

xAI. (2025). *Grok API Models and Pricing*. Tersedia pada: https://docs.x.ai/docs/models. (Diakses: 12 Januari 2025).

xAI. (2025). *Grok-4 Technical Overview*. xAI. Tersedia pada: https://x.ai/grok. (Diakses: 12 Januari 2025).

xAI. (2025). *Grok-4: Advanced reasoning model*. Tersedia pada: https://x.ai/grok. (Diakses: 12 Januari 2025).

Yang, Z., Li, L., Lin, K., Wang, J., Lin, C., Liu, Z., & Wang, L. (2023). *The Dawn of LMMs: Preliminary Explorations with GPT-4V(ision)*. ArXiv. /abs/2309.17421. (Diakses: 9 April 2025).

Yang, Z., Li, L., Wang, J., Lin, K., Azarnasab, E., Ahmed, F., ... & Wang, L. (2023). *MedGemma: Medical Multimodal Models*. Google Research.

Yesankar, P.R., Puri, C.G., & Gote, P.M. (2025). *AI-Powered Clinical Decision Support Systems (CDSS): Challenges, Benefits, Applications, and Future Directions*. 2025 International Conference on Machine Learning and Autonomous Systems (ICMLAS), 1192-1197.

Yüzbaşıoğlu E. (2021). Attitudes and perceptions of dental students towards artificial intelligence. *Journal of Dental Education*, 85(1), 60–68.

UNIVERSITAS
GADJAH MADA
**Large Multimodal Model (LMM) sebagai Clinical Decision Support System (CDSS) dalam Sistem
Rujukan Kesehatan Gigi dan Mulut**
Achmad Zam Zam Aghasy, Prof. dr. Hari Kusnanto Josef, SU., Sp.KKLP, Dr.PH
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Zhang, Y., Lyu, C., Chang, L., Yang, H., Ji, B., & Wei, L. Y. (2025). A systematic review of automated International Classification of Diseases coding models using the Medical Information Mart for Intensive Care dataset. *Digital Health*, 11, 20552076251404518.

Zhu, H., Xu, Y., Li, Y., Meng, Z., & Liu, Z. (2025*). DentalBench: benchmarking and advancing LLMs capability for bilingual dentistry understanding*. *arXiv preprint arXiv*:2508.20416.

Zhuang, Y., Zhang, J., Li, X., Liu, C., Yu, Y., Dong, W. & He, K. (2025). Autonomous International Classification of Diseases Coding Using Pretrained Language Models and Advanced *Prompt* Learning Techniques: Evaluation of an Automated Analysis System Using Medical Text. *Journal of Medical Internet Research,* 27, e63020.

Zwaan, L., Rodman, A., dan Shimizu, T. (2026). Trust, Scrutiny, or Collaboration? A Performance-Based Framework for Human–AI Interaction in Medicine. *NEJM AI,* 3(5).