



## Calculation of Nutritional Composition and "Growol" Calories in Micro and Medium Enterprises (MSMEs) in Kulon Progo

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**Abstract:** Yogyakarta Province is ranked second with the highest prevalence of Diabetes Mellitus (DM) in Indonesia. Choosing the right food for someone with DM is incredibly significant as it directly impacts their blood sugar levels. The aim of this community service is to increase the knowledge of MSME entrepreneurs and the community about the nutritional and calorie content of Growol which can be an alternative food to replace rice for DM patients. The method chosen to overcome this problem is through service learning. This community service was carried out in Hargomulyo Village, Kokap District, Kulon Progo Regency. This community service activity has been proven to increase the knowledge of MSME entrepreneurs and the community in recognizing nutritional content and how to calculate food calories. MSME entrepreneurs are also able to utilize innovation and technology to market and grow.

**Keywords:** Calories; Growol; Diabetes mellitus; MSMEs

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### Introduction

Diabetes Mellitus (DM) is one of the biggest health problems in the world.<sup>1</sup> The results of Basic Health Research (Riskesdas) in 2018 showed that the prevalence of DM in Indonesia reached 10.9%. This figure increased compared to 2013, namely 6.9%<sup>2</sup>. The Ministry of Health of the Republic of Indonesia reports that DIY Province is ranked second with the highest prevalence of Diabetes Mellitus (DM) in Indonesia. This increasing prevalence contributes to increasing morbidity and mortality in society. This condition is exacerbated by the increasing prevalence of DM in the young age group.

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<sup>1</sup> Nita G Forouhi et al., "Dietary and Nutritional Approaches for Prevention and Management of Type 2 Diabetes," *Bmj* 361 (2018).

<sup>2</sup> Kemenkes RI, "Hasil Riset Kesehatan Dasar Tahun 2018," *Kementrian Kesehatan. RI* 53, no. 9 (2018): 1689-99.

*Table 1. Prevalence of DM based on Doctor Diagnosis*

Regency/City	Diagnosis DM		N Weighted
	%	95 % CI	
<b>Kulon Progo</b>	<b>1,93</b>	<b>1,35 – 2,76</b>	<b>1.267</b>
Bantul	2,57	1,99 – 3,31	2.996
Gunung Kidul	1,69	1,17 – 2, 44	2.192
Sleman	2,47	1, 85 – 3,29	3.591
Yogyakarta	3,86	3, 04 – 4,90	1.272
<b>DIY Province</b>	<b>2,44</b>	<b>2,31 – 2,80</b>	<b>11.319</b>

Source: DIY Province Basic Health Research Results, 2018

Based on Table 1 in 2018 Riskesdas reported that Kulon Progo Regency had the second lowest prevalence of DM after Gunung Kidul Regency. Even though it is ranked second lowest, DM is ranked third (9,661) of the top ten diseases in Kulon Progo<sup>3</sup>. This condition encourages various initiatives to design DM prevention models. From Table 2 we can see the most disease in all groups in 2021 at Kulon Progo.

*Table 2. Top ten diseases in all age groups in 2021*

No.	Most Diseases	Total
1.	Essential (Primary) Hypertension	45.721
2.	Dyspepsia	12.310
3.	Non-Insuline-dependent DM without complications	9.661
4.	Myalgia	8.992
5.	Supervision of other normal pregnancy	7.795
6.	Acute nasopharyngitis (common cold)	6.566
7.	Congestive heart failure	6.195
8.	Surveillance of contraceptive	6.050
9.	Non-Insuline-dependent DM unspecified complications	5.733
10.	Headache	4.973

Source: Kulon Progo Health Profile, 2021

One effort to reduce the prevalence of DM is by regulating food composition.<sup>4</sup> Choosing the right food for someone with diabetes mellitus is incredibly significant as it directly impacts their blood sugar levels and overall health. Adjusting food composition for DM patients can be done using the glycemic index approach. The glycemic index is an indicator to determine the physiological effects of carbohydrates on changes in blood glucose levels.<sup>5</sup> Foods with a low glycemic index are converted into glucose gradually.

<sup>3</sup> Badan Penleitian dan Pengembangan Kesehatan, "Laporan Provinsi DI Yogyakarta Riskesdas 2018," 2019.

<sup>4</sup> Dinas Kesehatan Kabupaten Kulon Progo, "Profil Kesehatan Kulon Progo Tahun 2021," 2022, <https://www.ptonline.com/articles/how-to-get-better-mfi-results>.

<sup>5</sup> Sheeraz A Rajput, Suhel Ashraff, and Muhammad Siddiqui, "Diet and Management of Type II

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Glycemic control in DM patients is important to prevent an increase in blood glucose which has the potential to cause complications.<sup>6</sup> Consistently choosing the right foods can help prevent or delay the onset of complications related to diabetes, such as nerve damage, kidney problems, and eye issues.

Hargomulyo Village is a village in Kokap District, Kulon Progo Regency, Yogyakarta Special Region. Hargomulyo Village has various potentials, one of which is Growol MSMEs.<sup>7</sup> Growol is a typical Kulon Progo food that is processed by fermenting cassava. This process causes growol to have the characteristics of being tasteless, slightly sour, and has a strong odor. Growol can be used as a substitute for rice by the people of the Kulon Progo area because it is a source of carbohydrates and is high in fiber. Growol also has a low sugar content so it can be an alternative food for DM patients and people undergoing diet programs. Food processing using fermentation technology has been proven to reduce glucose levels in food. In addition, growol can inhibit the digestibility of starch which contributes to reducing the glycemic index of a food ingredient.<sup>8</sup>

Community involvement is very important as an effective strategy for resolving DM problems. In terms of financing, DM is a disease that requires a long treatment time and expensive treatment costs. This results in an increasingly high burden on the country's economy. The role of micro, small and medium enterprises (MSMEs) in processing and marketing healthy food contributes to the economic development of local communities. One of the MSMEs that has the potential to continue to be developed and has unique characteristics from Kulon Progo Regency is growol production. Growol is a food made from cassava with high fiber which is suitable as a substitute food source for rice. The dietary fiber in growol can play a role in controlling glucose and lipid levels in the blood. The higher the dietary fiber content, the more controlled the glucose content in the blood, and vice versa.<sup>9</sup>

Calorie counting is an effective solution in preventing and controlling DM. Growol can be used as an alternative food substitute for rice which is suitable for DM sufferers and people who are on a diet program. This is in line with several previous findings which state that growol can be a staple food or a distraction in preventing DM. Various approaches and assistance are needed in processing growol because its smell is "rancid", tasteless and slightly sour. An MSME entrepreneur approach is needed to utilize growol as the main alternative food that is popular with the public. The aim of this community

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Diabetes Mellitus in the United Kingdom: A Narrative Review," *Diabetology* 3, no. 1 (2022): 72–78.

<sup>6</sup> Amena Sadiya and Rama Mnl, "Impact of Food Pattern on Glycemic Control among Type 2 Diabetic Patients: A Cross-Sectional Study in the United Arab Emirates," *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, 2019, 1143–50.

<sup>7</sup> Agustinus Aryo Lukisworo, "Potensi Sumber Daya Alam Desa Hargomulyo," *Jurnal Atma Inovasia* 1, no. 4 (2021): 540–47.

<sup>8</sup> Desty Ervira Puspaningtyas et al., "Analisis Potensi Prebiotik Growol: Kajian Berdasarkan Perubahan Karbohidrat Pangan," *Gizi Indonesia* 42, no. 2 (2019): 83–90.

<sup>9</sup> Yasinta Nofia, Brian Wasita, and Tri Nugraha Susilawati, "The Level of Flavonoid and the Antioxidant Activity of the Growol Flour," 2022.

service is to increase the knowledge of MSME entrepreneurs and the community about the nutritional and calorie content of Growol which can be an alternative food to replace rice for DM patients.

## **Method**

This community service was conducted in Hargomulyo Village, Kokap District, Kulon Progo Regency. The method chosen to overcome this problem is through a service-learning approach with the stages of preparation, service, and evaluation. In the preparation stage, observation, interview and planning were conducted. The service stage was carried out in the form of counselling and training. Participants in this counseling and training consisted of MSME entrepreneurs and the community around Hargomulyo village, consisting of 53 participants. The instrument used to evaluate community service activities is a questionnaire. The questionnaire contains calorie calculations and the composition of healthy foods. Questionnaires were distributed to participants before and after being given counseling and training. This community service was carried out in one cycle by performing the following steps.

### ***Observation***

This stage aimed to identify the problems that exist in the community and the capacity and potential for problem-solving owned by the subjects of the community service. In addition, the authors also conducted a preliminary study to find out an overview of the implementation of MSMEs that already exist.

### ***Interview***

The author conducted in-depth interviews with the Leader of Hargomulyo Village to explore the various health problems being faced and the development of MSMEs. Then interviews were also conducted with MSME entrepreneurs regarding the production processes they run.

### ***Planning***

Author and subjects of the community service planned problem-solving activities in some meetings according to the assessment results. The activities undertaken as a solution to the problem are determined based on priority among the various other proposed efforts. The author planned to increase knowledge about how to calculate nutrients and calories in food and the composition of healthy foods, including for DM patients.

### ***Counseling and Training***

This stage was the implementation of the planning that was made in the previous stage. Before starting, the community was given a questionnaire to determine their level of knowledge. The counseling material provided is about the composition of healthy food,

after which it is followed by training on how to calculate calories and nutrition in food. After completion, the community was given a questionnaire to determine their level of knowledge after being provided with counseling and training materials.



*Figure 1. Community Service Flow*

### ***Evaluation***

The final phase of this community service was evaluation. Knowledge improvement was evaluated by giving pretest and post-test questions to the participants of MSME and the community. Evaluation of the activeness of the participants was carried out by open observation. The questionnaire used consists of 10 multiple choice questions regarding food composition, calculation of calories and food nutrition. The result of the pretest and posttest were analyzed descriptively to know the mean, standard deviation, and frequency. Due to the data was not normally distributed, then it continued with Wilcoxon's Signed Ranks Test.

### **Result**

#### ***Observation***

The result of the observation showed Hargomulyo Village has several potentials, there are Entrepreneurship Potential, Agricultural Potential, and Tourism and Cultural Potential. Existing MSME Entrepreneurship Potentials include processing Javanese sugar, palm sugar, ant sugar, growol, and other processed cassava and sweet potatoes. One of the dominant MSMEs is growol processing. Growol is a traditional food typical of Kulon Progo Regency and a staple food that is the mainstay of the community.

### ***Interview***

From the results of the interviews, it was found that the health problems experienced by the people of Hargomulyo village were mostly hypertension, heart disease, and DM. Then the MSMEs found in Hargomulyo village are very varied, but this village is famous as a food center with its specialty, growol. Then interviews were also conducted with Growol MSME entrepreneurs, they said that they did not know the nutritional or calorie content of the growol they produced.

### ***Planning***

A Plan was made to overcome problems in the community include counseling and training. In this activity the author coordinated with the leader of Hargomulyo village regarding location, accommodation and invitations for participants. Then the author creates educational material regarding food composition and how to calculate calories and nutrients in food.

### ***Counseling and Training***

Counseling and training activities were provided to all participants present are MSMEs and the surrounding community (n=53). Counseling was carried out by providing material regarding nutritional content and calorie calculations. This activity began with a pretest and closed with a post-test to assess the participants understanding of the material. The education session by the author was then followed by a question and answer session.

### ***Evaluation***

The counseling carried out went smoothly. The enthusiasm of the participants was also very good. This is proven by the number of participants who took part in this counseling exceeding the target. Apart from MSME entrepreneurs, this activity was also attended by village youth and community leaders. The next activity is to provide training to participants regarding calorie and nutritional calculations, in this case participants are asked to calculate the calorie and nutritional content of the growol. In addition, participants were also taught how to read composition labels on food. However, after training the community and MSME entrepreneurs were able to know the calorific value of a product and its nutritional content.

Based on Table 3, it can be seen the majority of participants were female (58.4%), aged >35 years (68 %), and last education was senior high school (69.8%).

Table 3. Data Demographic Result

Variable	Category	Frequency (n=53)	Percentage (%)
Gender	Male	22	41.5
	Female	31	58.4
Age (year)	≤35	17	32.0
	>35	36	68.0
Last Education	Elementary School	0	0
	Junior High School	8	15.0
	Senior High School	37	69.8
	Diploma	4	7.5
	Undergraduate	4	7.5

Based on Table 4, it can be seen that the result of education assessed from the pretest and posttest conducted showed that there was no significant increase between before and after counseling, where  $p=0.000$ . However, there has been an increase in knowledge of the community and MSME entrepreneurs from 64.1 to 81.7

Table 4. Knowledge Test Result

Variable	Mean	Standard Deviation	Wilcoxon Signed Ranks Test
			<i>p</i>
Pretest Score	64.1	9.4	0.000
Posttest Score	81.7	9.9	

This community service activity has been proven to increase the knowledge of MSME entrepreneurs and the public in recognizing nutritional content and how to calculate food calories. Many people previously did not know the daily consumption of sugar, salt and fat. However, after the education was carried out, people became more aware of the daily consumption of sugar, salt and fat. This is proven by the fact that more people answered correctly to the question.

This is in line with research conducted by Fadlina & Ginting (2021) which explains that partners who received counseling and training admitted that they understood better how to design effective and efficient marketing strategies, how to manage finances simply, and understood a little more about how to design good human resource needs<sup>10</sup>. The research was conducted by Atmaja, et al (2021) also explains that activities training and mentoring and on target. From activities. Currently, MSMEs and the community are

<sup>10</sup> Fadlina dan Garuda Ginting Abdul Karim, "Pemanfaatan Digital Marketing Dengan Facebook Ads Bagi Pelaku UMKM Di Labuhanbatu," *Jurnal Pengabdian Masyarakat Gemilang (JPMG)* 2 (2021): 12-16.

starting to understand the concept of digital marketing and technology products that can be used to market MSME products and can train and simulate the marketing of MSME products using digital media such as Facebook.<sup>11</sup>

## Discussion

Counseling is an educational activity carried out by disseminating information and instilling confidence. So that people are aware, know, willing and able to do the recommended things. The aim of counseling is to increase knowledge, attitudes and behavior so as to maintain health. Counseling is one technique that plays an important role in preventing complications.<sup>12</sup> The delivery of material in this outreach activity uses power point media and language that is easy to understand. So that participants are able to receive the health messages conveyed. Creating a relaxed and entertaining environment can help the success of extension activities.<sup>13</sup>

This community service has received appreciation from the local community, especially MSME entrepreneurs. So far, people have never received training on calculating the composition and calories of growol. MSME entrepreneurs have only produced, packaged and marketed without knowing the nutritional content. Then entrepreneurs don't know how many calories are in one pack of growol. During the training, the community felt helped and gained a lot of experience in producing healthy food. Apart from that, providing training on product packaging and marketing by labeling nutritional and calorie values can become a growing brand among the public. MSME entrepreneurs are given training with the aim of introducing growol throughout Indonesian society, even throughout the world.

Indonesian society currently relies heavily on and relies on rice as a daily staple food. If life depends on rice, it will certainly affect the level of food security. The Indonesian government has launched a food diversification program based on local food. This program encourages people to consume foods that vary based on nutritional content (carbohydrates, protein and fat). Sources of carbohydrates are generally obtained from food ingredients such as rice, sweet potatoes, corn, wheat and cassava. Some of these food ingredients have different absorption capacities and glycemic indexes. For DM sufferers, choosing food ingredients is very important to control blood sugar levels. Type 2 Diabetes Mellitus (DM) is generally caused by consuming foods that are high in sugar, fat and low

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<sup>11</sup> Hanung Eka Atmaja, Budi Hartono, and Khairul Ikhwan, "Peningkatan Pengetahuan Dan Keterampilan Manajemen Pada Pelaku UMKM Desa Balesari Kabupaten Magelang," *Dinamisia : Jurnal Pengabdian Kepada Masyarakat* 5, no. 6 (2021): 1487-92, <https://doi.org/10.31849/dinamisia.v5i6.4902>.

<sup>12</sup> Mahendro Prasetyo Kusumo and Elsy Maria Rosa, "Community Empowerment Model to Improve Healthy Living Behaviors in Rural Areas: Qualitative Study," *Bali Medical Journal* 10, no. 3 (2021): 1098-1102.

<sup>13</sup> Mahendro Prasetyo Kusumo et al., "Theater Performing Arts (TPA): Community Empowerment to Improve Blood Glucose Control Behavior in Yogyakarta," *International Journal of Endocrinology and Metabolism* 18, no. 4 (2020).

in fiber. In prevention, consuming foods with a low glycemic index can minimize DM and its complications. One food with a low glycemic index is cassava.

Cassava is a strategic food as it is a source of carbohydrates in Indonesia, particularly food those living in dry regions in Java, Sumatra and Sulawesi as both a staple and supplementary food. Cassava is a tuber that is well known to the public and has been used as a local food ingredient that has the potential for developed into a variety of food products and can be used as a diversified ingredient in processed food to replace rice.<sup>14</sup> In addition, cassava has a low glycemic index which can be recommended for DM sufferers.<sup>15</sup> The effect of foods with a low glycemic index (GI) and high fiber content is to slow the absorption rate of 2-hour postprandial blood glucose levels and reduce the insulin response, thereby improving the lipid profile and promoting the development of insulin resistance.<sup>16</sup>

Table 4. Nutritional composition of 100 gr of cassava

Component	Rate	
	Cassava	Rice
Calori (Cal)	146	357
Protein (gr)	1,2	8,4
Fat (gr)	0,3	1,7
Carbohydrates (gr)	34,7	77,1
Fiber (gr)	0,9	0,2
Calsium (mg)	33	147
Fosfor (mg)	40	81
Zink (mg)	0,7	1,8
Vitamin B (mg)	0,06	0,20
BDD (%)	75	100

Source: <sup>17</sup>

Based on table 4, we can see the number of calories in 100 grams of cassava is 146 calories. Meanwhile, rice has 357 calories. Based on this data, it can be seen that the calories in white rice are higher than cassava. Cassava also contains various nutrients including carbohydrates, protein, fiber and minerals such as potassium, magnesium, phosphorus and calcium. Due to its diverse nutrition, cassava is believed to have health

<sup>14</sup> Inuk Wahyuni Istiqomah and Angga Martha Mahendra, "Pemberdayaan Masyarakat Melalui Penyuluhan Inovasi Pengolahan Singkong Dan Opak Sebagai Upaya Pengembangan Produk Unggulan Di Desa Bleberan Kecamatan Jatirejo Kabupaten Mojokerto," *Jurnal Pengabdian Masyarakat* 3, no. 1 (2022): 25-32.

<sup>15</sup> Ratna Wylis Arief, Erliana Novitasari, and Robet Asnawi, "Food Diversification of Cassava as Functional Food Instead of Rice in Lampung," *PLANTA TROPIKA* 6, no. 2 (2018): 62-69.

<sup>16</sup> Qisty Dzakiyyatu Husna et al., "Pelatihan Pengolahan Singkong Untuk Mengendalikan Kadar Gula Darah Pada Masyarakat Desa Klepu, Ngadirojo, Wonogiri," *I-Com: Indonesian Community Journal* 3, no. 2 (2023): 762-71, <https://doi.org/10.33379/icom.v3i2.2569>.

<sup>17</sup> Departemen Kesehatan RI, "Daftar Komposisi Bahan Makanan," *Bhartara Karya Aksara, Jakarta* 13 (1992).

benefits, especially as a source of nutrition. These nutrients from cassava help maintain intestinal health, reduce inflammation, and control blood sugar levels. Therefore, food made from processed cassava can be a solution to prevent increased blood glucose.<sup>18</sup>

Growol is a typical food from Kulon Progo Regency which has a rough and dense texture like rice. The processing method is through the cassava fermentation process. Cassava fermentation is a way to prevent cassava damage after harvest. This is because cassava is more easily damaged than other types of tubers. This process causes processed cassava (growol) to have the characteristics of being tasteless, slightly sour, and has a strong smell. However, the fermentation process has been proven to reduce glucose levels in food. The fermentation process in growol can inhibit the digestibility of starch which contributes to reducing the glycemic index of a food ingredient. So growol can be an alternative substitute for rice for DM patients.

Good quality growol must go through a careful and thorough manufacturing process. From the selection of raw materials, hygiene and sanitation of the processing process to packaging and product marketing. Figure 2 is an illustration of how growol is processed by one of the MSME entrepreneurs in Hargomulyo Village:

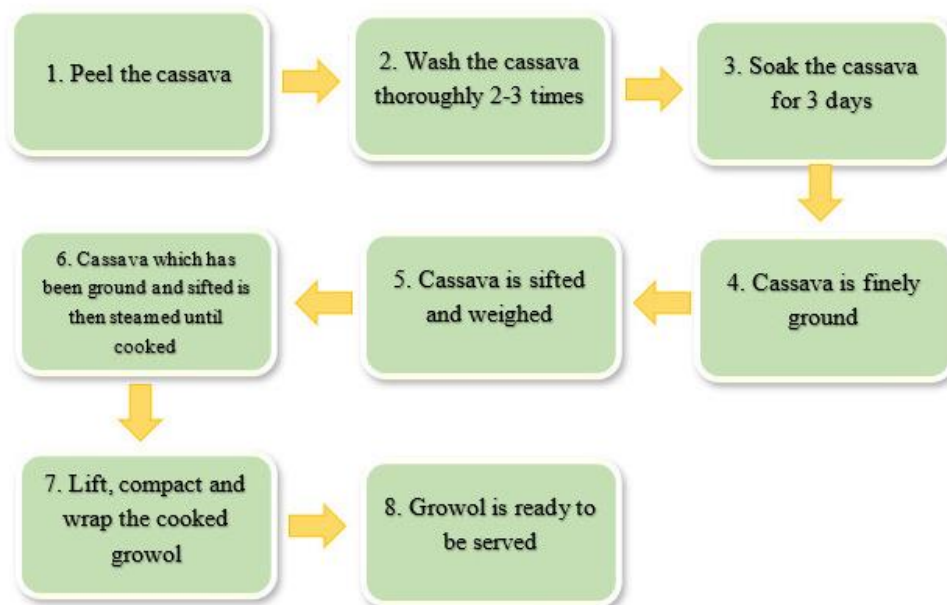


Figure 2. The Process of Making Growol

Growol can be a non-pharmacological therapy for type 2 DM patients. The dietary fiber contained in processed cassava is useful for reducing the risk of increasing blood glucose.<sup>19</sup> This is in line with previous findings which explain that the dietary fiber in

<sup>18</sup> Husna et al., "Pelatihan Pengolahan Singkong Untuk Mengendalikan Kadar Gula Darah Pada Masyarakat Desa Klepu, Ngadirojo, Wonogiri."

<sup>19</sup> Martin O Weickert and Andreas F H Pfeiffer, "Impact of Dietary Fiber Consumption on Insulin Resistance and the Prevention of Type 2 Diabetes," *The Journal of Nutrition* 148, no. 1 (2018): 7-12.

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growol plays a role in controlling blood glucose. The dietary fiber in processed cassava can slow stomach emptying and food digestion. This leads to long-lasting satiety, increased insulin secretion, and decreased glucose. Growol can be a recommendation to replace rice in a balanced menu. A balanced menu is an arrangement of dishes that contains various nutrients in quantity and quality that suits each individual's calorie needs.<sup>20</sup> A balanced menu can be served morning, afternoon and evening, including snacks with a meal schedule distribution formula, namely: 20% breakfast, 15% morning snack, 25% lunch, 15% afternoon snack and 25% afternoon meal.<sup>21</sup>

Modifying food intake through processed Growol is an initial solution for primary prevention of DM. This prevention aims not only to prevent disease, but also to reduce risk factors. This description can help the government of Hargomulyo Village, Kokap District, Kulon Progo Regency in creating strategies and policies to prevent uncontrolled DM. Even though growol is one of the recommended healthy foods, there are still many people who are not interested in consuming it. Public perception tends to be negative towards growol, such as its "rancid" smell and slightly sour taste, causing people to not be interested in consuming it. Currently, growol has never been introduced to young age groups about the benefits of this food. Even though the prevalence of DM is currently affecting the young age group.

The role of MSMEs is not only processing and marketing to improve the community's economy. However, MSMEs can play a role in introducing growol as a healthy food among young people to reduce DM cases and prevent complications. Through attractive and appetizing packaging methods, it can be a solution to increase interest and selling value of a product.<sup>22</sup> In the current technological era, the use of social media platforms can be an alternative in growol marketing.<sup>23</sup>

Apart from that, the existence of attractive packaging innovations by providing food labels can be an alternative to growol branding among the public. The Indonesian Food and Drug Supervisory Agency (BPOM) in 2018 explained that the mandatory items displayed on food labels are product name, composition, net weight, manufacturer's name, production date and code, expiration date, and permit number.<sup>24</sup> Food labels can help consumers better understand the nutritional value of food. Additionally, food labels can be used to compare the nutritional value of similar food products.<sup>25</sup> This can enable

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<sup>20</sup> M P Kusumo et al., "Buku Pemantauan Kencing Manis," *Yogyakarta: Penerbit Elmatera*, 2019.

<sup>21</sup> Mahendro Prasetyo Kusumo, Nur Hidayah, and Nabila Ardia Pramono, "Pemberdayaan Masyarakat Dalam Mengendalikan Diabetes Melitus Berbasis Budaya LOKAL," in *Prosiding Seminar Nasional Program Pengabdian Masyarakat*, 2020.

<sup>22</sup> Sook-Fern Yeo et al., "Product Packaging: Impact on Customers' Purchase Intention," *International Journal of Business and Society* 21, no. 2 (2020): 857-64.

<sup>23</sup> Ni Komang Mela Tri Utari, "Marketing Strategy of Small and Medium Enterprises (MSMES) through Instagram in the Marketing Era 4.0," *Jurnal Ekonomi & Bisnis JAGADITHA* 8, no. 1 (2021): 15-22.

<sup>24</sup> BPOM RI, "Peraturan Badan Pengawasan Obat Dan Makanan Nomor 31 Tahun 2018 Tentang Label Pangan Olahan," Jakarta, 2018.

<sup>25</sup> Rabab A Wahab, "Food Label Use and Awareness of Nutritional Information among Consumers in

people to choose healthy foods based on relevant nutritional information. Food labels will be very useful for people who are on special diets (for example people who suffer from DM and hypertension) to choose foods that suit their health conditions.<sup>26</sup> Based on the results of a survey conducted by the US Food and Drug (FDA) in 2005, 60-80% of consumers in America read food labels before they buy new food products. When reading food labels, you need to pay attention to food ingredients that pose health risks, such as sugar, salt and fat. If too many of these ingredients are consumed, there is a risk of diabetes, hypertension, coronary heart disease, obsession and stroke.<sup>27</sup>

The advantage of the results of this community service is that it is able to encourage the community to increase their knowledge and skills in producing and marketing growol. After growol is produced, MSME producers can use digital platforms as marketing media. So that the products produced can be reached by many people throughout Indonesia. Through the use of social media platforms, MSME entrepreneurs are able to sell their products outside the market. So that Growol is able to spread outside the Kulon Progo area.

Tokopedia is a marketplace that provides facilities for sellers to buy and sell easily without renting a shop. This marketplace has a TopAds feature that can promote the products being sold. This feature will display products that will be advertised in various strategic places, such as the main page, search page, and product recommendations. The more advertisements that appear, the more often visitors will see the product. The more visitors the product, the more it will be seen and potentially added to the shopping basket. The more visitors who buy the product, the seller's income will increase.<sup>28</sup> Previous research explains that Tokopedia is a marketplace that is very helpful in terms of product sales.<sup>29</sup> Facebook is a social media where users can update status, comment and interact with other users. Facebook offers a marketplace feature that allows users to promote and sell a product. The more users who are active on Facebook, the more opportunities a product will sell.<sup>30</sup>

Another strategy that can be implemented as a marketing strategy is the packaging and labeling process. The packaging process is an important process, besides

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Bahrain: An Exploratory Study," *KnE Life Sciences*, 2018, 26–36.

<sup>26</sup> Samit Dutta and Deval Patel, "Study of Consumer Awareness on Food Labelling and Use of Pack Information for Purchase of Pre-Packaged Food Products," *The International Journal of Indian Psychology* 4, no. 4 (2017): 63–72.

<sup>27</sup> Kemenkes RI, "Peraturan Menteri Kesehatan Republik Indonesia Nomor 30 Tahun 2013 Tentang Pencantuman Informasi Kandungan Gula, Garam, Dan Lemak Serta Pesan Kesehatan Untuk Pangan Olahan Dan Pangan Siap Saji," 2013.

<sup>28</sup> W. Tan and A. Alzi, "Perencanaan Strategi Pemasaran Di Era Pandemi Pada Outlet Lektor 'Food By Mella'," *Natl. Conf. Community Serv.*, 2021, <https://journal.uib.ac.id/index.php/nacospro/article/view/5951>.

<sup>29</sup> Arief Maulana Malik et al., "Fitur Tokopedia Sebagai Media Promosi Pada PT. Saafir Prisma Indonesia," *Jurnal Cyber PR* 2, no. 2 (2022): 173–84.

<sup>30</sup> Yash Chawla and Grzegorz Chodak, "Social Media Marketing for Businesses: Organic Promotions of Web-Links on Facebook," *Journal of Business Research* 135 (2021): 49–65.

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functioning to protect the product, product packaging also increases the selling price and attracts the attention of consumers. This is adjusted to the behavior of consumers who tend to look at the product packaging first. Therefore, the better and more attractive the packaging used, the greater the possibility of attracting more attention from consumers. Steps that need to be taken into account before the packaging and labeling process include ensuring that the quality of the product being processed is good and specific, paying attention to product hygiene so that it meets the health standards set by the health service as proven by a PIRT (Home Industrial Food) certificate issued by the local Health Service. For these products, meet halal standards in accordance with the provisions and obtain a certificate from the local Indonesian Ulema Council (MUI), then the product packaging must not contain foreign objects that can make the product unhygienic and must comply with the standards set by the health service.<sup>31</sup>

The hope is that by empowering MSME producers, Growol will be able to help promote healthy food by paying attention to nutritional and calorie content among all ages. Eating healthy foods and controlling food intake can be an initial solution for primary prevention of DM. Considering that DM disease is currently attacking the young age group. Apart from that, a multi-level approach is needed, one of which is support from policy makers in increasing motivation.<sup>32</sup>

## Conclusion

This community service is able to encourage MSME entrepreneurs to increase their knowledge and skills in producing and marketing growol. MSME entrepreneurs and local communities are also able to know the calorific value and nutritional content of a product and can make growol a substitute for rice for DM sufferers. MSME entrepreneurs are also able to utilize innovation and technology to market and grow. Such as packaging innovation and the use of Facebook and Tokopedia platforms to market MSME products.

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<sup>31</sup> Agustinus Aryo Lukisworo, "Pemanfaatan Platform Digital Sebagai Media Pemasaran Growol," *Jurnal Atma Inovasia* 2, no. 1 (2022): 69–78, <https://doi.org/10.24002/jai.v2i1.4442>.

<sup>32</sup> Kusumo, Hidayah, and Pramono, "Pemberdayaan Masyarakat Dalam Mengendalikan Diabetes Melitus Berbasis Budaya LOKAL."

## References

- Abdul Karim, Fadlina dan Garuda Ginting. "Pemanfaatan Digital Marketing Dengan Facebook Ads Bagi Pelaku UMKM Di Labuhanbatu." *Jurnal Pengabdian Masyarakat Gemilang (JPMG)* 2 (2021): 12–16.
- Arief, Ratna Wylis, Erliana Novitasari, and Robet Asnawi. "Food Diversification of Cassava as Functional Food Instead of Rice in Lampung." *PLANTA TROPIKA* 6, no. 2 (2018): 62–69.
- Badan Penleitian dan Pengembangan Kesehatan. "Laporan Provinsi DI Yogyakarta Riskesdas 2018," 2019.
- BPOM RI. "Peraturan Badan Pengawasan Obat Dan Makanan Nomor 31 Tahun 2018 Tenatng Label Pangan Olahan." Jakarta, 2018.
- Chawla, Yash, and Grzegorz Chodak. "Social Media Marketing for Businesses: Organic Promotions of Web-Links on Facebook." *Journal of Business Research* 135 (2021): 49–65.
- Departemen Kesehatan RI. "Daftar Komposisi Bahan Makanan." *Bhartara Karya Aksara, Jakarta* 13 (1992).
- Dinas Kesehatan Kabupaten Kulon Progo. "Profil Kesehatan Kulon Progo Tahun 2021," 2022. <https://www.ptonline.com/articles/how-to-get-better-mfi-results>.
- Dutta, Samit, and Deval Patel. "Study of Consumer Awareness on Food Labelling and Use of Pack Information for Purchase of Pre-Packaged Food Products." *The International Journal of Indian Psychology* 4, no. 4 (2017): 63–72.
- Forouhi, Nita G, Anoop Misra, Viswanathan Mohan, Roy Taylor, and William Yancy. "Dietary and Nutritional Approaches for Prevention and Management of Type 2 Diabetes." *Bmj* 361 (2018).
- Hanung Eka Atmaja, Budi Hartono, and Khairul Ikhwan. "Peningkatan Pengetahuan Dan Keterampilan Manajemen Pada Pelaku UMKM Desa Balesari Kabupaten Magelang." *Dinamisia: Jurnal Pengabdian Kepada Masyarakat* 5, no. 6 (2021): 1487–92. <https://doi.org/10.31849/dinamisia.v5i6.4902>.
- Husna, Qisty Dzakiyyatu, Muthoifa, Namira Anfi Normalitasari, Ahmad Farisulhaq, and Dwi Linna Suswardany. "Pelatihan Pengolahan Singkong Untuk Mengendalikan Kadar Gula Darah Pada Masyarakat Desa Klepu, Ngadirojo, Wonogiri." *I-Com: Indonesian Community Journal* 3, no. 2 (2023): 762–71. <https://doi.org/10.33379/icom.v3i2.2569>.
- Istiqomah, Inuk Wahyuni, and Angga Martha Mahendra. "Pemberdayaan Masyarakat Melalui Penyuluhan Inovasi Pengolahan Singkong Dan Opak Sebagai Upaya Pengembangan Produk Unggulan Di Desa Bleberan Kecamatan Jatirejo Kabupaten Mojokerto." *Jurnal Pengabdian Masyarakat* 3, no. 1 (2022): 25–32.

- Kemenkes RI. "Hasil Riset Kesehatan Dasar Tahun 2018." *Kementrian Kesehat. RI* 53, no. 9 (2018): 1689–99.
- Kemenkes RI. "Peraturan Menteri Kesehatan Republik Indonesia Nomor 30 Tahun 2013 Tentang Pencantuman Informasi Kandungan Gula, Garam, Dan Lemak Serta Pesan Kesehatan Untuk Pangan Olahan Dan Pangan Siap Saji," 2013.
- Kusumo, M P, T S F Dewi, J Hendrartini, and Z M Sufro. "Buku Pemantauan Kencing Manis." *Yogyakarta: Penerbit Elmatera*, 2019.
- Kusumo, Mahendro Prasetyo, Julita Hendrartini, Zaenal Muttaqien Sufro, and Fatwa Sari Tetra Dewi Dewi. "Theater Performing Arts (TPA): Community Empowerment to Improve Blood Glucose Control Behavior in Yogyakarta." *International Journal of Endocrinology and Metabolism* 18, no. 4 (2020).
- Kusumo, Mahendro Prasetyo, Nur Hidayah, and Nabila Ardia Pramono. "Pemberdayaan Masyarakat Dalam Mengendalikan Diabetes Melitus Berbasis Budaya LOKAL." In *Prosiding Seminar Nasional Program Pengabdian Masyarakat*, 2020.
- Kusumo, Mahendro Prasetyo, and Elsy Maria Rosa. "Community Empowerment Model to Improve Healthy Living Behaviors in Rural Areas: Qualitative Study." *Bali Medical Journal* 10, no. 3 (2021): 1098–1102.
- Lukisworo, Agustinus Aryo. "Pemanfaatan Platform Digital Sebagai Media Pemasaran Growol." *Jurnal Atma Inovasia* 2, no. 1 (2022): 69–78. <https://doi.org/10.24002/jai.v2i1.4442>.
- Agustinus Aryo Lukisworo, "Potensi Sumber Daya Alam Desa Hargomulyo." *Jurnal Atma Inovasia* 1, no. 4 (2021): 540–47.
- Malik, Arief Maulana, Adiella Yankie Lubis, Fizzy Andriani, and Anggia Hesti Benjamin. "Fitur Tokopedia Sebagai Media Promosi Pada PT. Saafir Prisma Indonesia." *Jurnal Cyber PR* 2, no. 2 (2022): 173–84.
- Mohapatra, Snigdha, and Pravat Kumar Mohanty. "Training Effectiveness: A Perspective of Engaged vs. Disengaged Employees." In *Business Analytics and Cyber Security Management in Organizations*, 195–203. IGI Global, 2017.
- Nofia, Yasinta, Brian Wasita, and Tri Nugraha Susilawati. "The Level of Flavonoid and the Antioxidant Activity of the Growol Flour," 2022.
- Puspaningtyas, Desty Ervira, Puspita Mardika Sari, Nanda Herdiyanti Kusuma, and Debora Helsius SB. "Analisis Potensi Prebiotik Growol: Kajian Berdasarkan Perubahan Karbohidrat Pangan." *Gizi Indonesia* 42, no. 2 (2019): 83–90.
- Rajput, Sheeraz A, Suhel Ashraff, and Muhammad Siddiqui. "Diet and Management of Type II Diabetes Mellitus in the United Kingdom: A Narrative Review." *Diabetology* 3, no. 1 (2022): 72–78.

- 
- Sadiya, Amena, and Rama Mnla. "Impact of Food Pattern on Glycemic Control among Type 2 Diabetic Patients: A Cross-Sectional Study in the United Arab Emirates." *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, 2019, 1143–50.
- Shivaraju, Padmanabha Thiruganahalli, Gangadhar Manu, M Vinaya, and Madhav K Savkar. "Evaluating the Effectiveness of Pre-and Post-Test Model of Learning in a Medical School." *National Journal of Physiology, Pharmacy and Pharmacology* 7, no. 9 (2017): 947.
- Tan, W., and A. Alzi. "Perencanaan Strategi Pemasaran Di Era Pandemi Pada Outlet Lekor 'Food By Mella'." Natl. Conf. Community Serv., 2021. <https://journal.uib.ac.id/index.php/nacospro/article/view/5951>.
- Utari, Ni Komang Mela Tri. "Marketing Strategy of Small and Medium Enterprises (MSMES) through Instagram in the Marketing Era 4.0." *Jurnal Ekonomi & Bisnis JAGADITHA* 8, no. 1 (2021): 15–22.
- Wahab, Rabab A. "Food Label Use and Awareness of Nutritional Information among Consumers in Bahrain: An Exploratory Study." *KnE Life Sciences*, 2018, 26–36.
- Weickert, Martin O, and Andreas F H Pfeiffer. "Impact of Dietary Fiber Consumption on Insulin Resistance and the Prevention of Type 2 Diabetes." *The Journal of Nutrition* 148, no. 1 (2018): 7–12.
- Yeo, Sook-Fern, Cheng-Ling Tan, Kah-Boon Lim, and Yong-Hwi Khoo. "Product Packaging: Impact on Customers' Purchase Intention." *International Journal of Business and Society* 21, no. 2 (2020): 857–64.