

Perception and Feedback on Virgin Coconut Oil Consumption Among Acute Coronary Syndrome Patients: A Qualitative Study

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Abstract

Background: Acute coronary syndrome (ACS) is one of the leading causes of death in Malaysia and worldwide. Being diagnosed with ACS causes poor quality of life, with patients always reporting of recurrent attacks and re-hospitalization. In addition, the current treatment which includes the prescription of statin to lower lipid levels is found to have several side effects on ACS patients. Those problems had guided the researcher to introduce a natural product, that is virgin coconut oil (VCO) as supplementary management of ACS. The aim of the study is to explore the participants' perception and feedback on 90 days of VCO consumption.

Methods: Eighteen patients with ACS (5 women and 13 men) from 25 to 65 years of age and with a disease duration ranging from 3 to 22 years were interviewed through a face-to-face in-depth interview following a semi-structured interview guide. Data were analyzed using the Atlas.ti, content analysis method, and manual transcription.

Results: VCO appeared in two themes, physiological and psychological effects. There were six subthemes of feedback covering decrease of appetite, easy to feel full/satiety, perceived reduction in body weight, feeling energetic, feeling active, and feeling healthy.

Conclusions: VCO consumption performed differently in patients with ACS and was perceived differently by them. Majority of the participants agreed that VCO has positive effects on the physiologically and psychological. The results from this study may provide guidance for clinicians on important issues that need to be addressed such as a new health promotion strategy that involves natural products in reducing ACS incidence.

Keywords: Virgin coconut oil; Loss of appetite; Satiety; Energetic; Weight lost

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Introduction

ACS was announced by WHO to be an important worldwide health problem and that it is necessary to critically identify strategies for effective management and treatment for ACS. Apart from being a global problem, Malaysia, one of the developing countries, now also faces the major problem where the incidence of its people having ACS is increasing. The prevalence and incidence of ACS in Malaysia are relatively high compared to several years ago. According to the data published in May 2014, acute coronary syndrome deaths in Malaysia reached 29,363 or 23.10% of total deaths in the country [1].

There is an immediate need to identify effective solutions

to reduce the incidence and prevalence of ACS. The increasing number of ACS cases each year is affecting the country's economy as more money is needed to be allocated for health care expenditure [2]. In University Malaya Medical Centre (UMMC), statistics of death caused by ACS from 2013 to 2015 has shown to fluctuate with a trend of 288, 301, and 281 cases (Medical Record Office, UMMC, 2016). One of the solutions is to introduce a natural product as additional management of ACS.

Complementary and alternative medicine (CAM) or therapies typically take a holistic approach to physical and mental health. According to the National Center for Complementary and Integrative Health (NCCIH) (2019), complementary describes therapies which may be used alongside treatments offered by

your doctor (such as yoga, massage, and meditation). However, alternative describes approaches which are generally meant to replace the treatments offered by your doctor (such as traditional Chinese medicine or ayurvedic medicine, or some herbal remedies or natural products such as virgin coconut oil, olive oil, ginger, and ginkgo biloba). Virgin coconut oil (VCO) is an example of a natural product that is currently widely used as a supplement in Malaysia. Introducing virgin coconut oil (VCO) as an innovative alternative to play the role of a supplementary treatment together with medical treatment for ACS patients could perhaps improve ACS.

VCO has attracted attention for its ability to benefit health, however, there lacks the exploration of its consumption feedbacks. This study focuses on the perception of and feedback on VCO consumption among ACS participants. This is considered the first qualitative study which explored feedback on VCO consumption.

Methods

The qualitative approach was used to gather information on the experiences of participants consuming VCO. Thematic analysis was used to analyze data collected from the face-to-face (FTF) in-depth interview transcripts which were then organized into themes and subthemes. There were two themes that emerged from the study namely, the physiological aspect and psychological aspect of consuming VCO. A total of six subthemes were also identified from those two themes: decrease in appetite, satiety, decrease in body weight, active, energetic, and healthy. Selected quotes from the face-to-face in-depth interviews are presented to enrich the illustration of the qualitative findings. The audio recording of the interviews of all Malay participants was transcribed in the Malay language, then translated into the English language by a language expert. A detailed description of the findings was achieved by selecting quotes of the participants to report on the major themes and subthemes. The selection of participants' quotes further adds to the transparency and trustworthiness of the findings and interpretation of the data. It is also in line with the qualitative approach which accents the importance of describing the experience of people from their point of view (Paraho, 2014).

Sampling and Recruitment

Patients who had participated in the RCT cross-over trial on the effect of VCO in reducing serum lipid, glucose, and hs-CRP levels (n=120) were recruited from the cardiology ward of UMMC. Initially, the following selection criteria were applied: aged 25 to 65, both genders, with stable ACS, with type 2 diabetes mellitus, and can understand the Malay and English languages.

Based on these criteria, 18 participants were selected to thoroughly explore their perception and feedback on VCO consumption. The selected participants were informed earlier, before the RCT trial, about the interview session. Once they had completed the RCT trial, the author contacted them via telephone to ask if they were interested in participating.

Data Analysis

Face-to-face in-depth interview was conducted to collect qualitative data to explore ACS patients' perceptions of VCO. Data analysis was conducted as each interview is completed. Interviews were analyzed sentence by sentence to categorize the meaning units. Statements or words related to the central meanings common to all groups, implying a theme, emerged in the first interview, of which were verified by the succeeding data collection. The interpreted themes were re-examined, validated, and reformulated according to the participants' comments. The themes and interview transcripts were translated into English and checked by Malay and English language translators. This involved preparing and organizing textual data for analysis, reading through textual data, coding to generate themes, representation of themes, and interpretation. Themes and subthemes which represent the many sides of participants' experiences were identified using the coding process. The audio recording of the interviews of all Malay participants was transcribed in the Malay language, then translated into the English language by a language expert. A detailed description of the findings was achieved by selecting quotes of the participants to report on the major themes and subthemes. The selection of participants' quotes further adds to the transparency and trustworthiness of the findings and interpretation of the data.

Themes and subthemes

Thematic analysis of the FTF in-depth interview transcriptions resulted in two themes and six subthemes that represent the participants' perceptions of VCO. Table 5.2 presents the said themes and subthemes.

Ethical approval

All participants in the study provided written consent. The approval from the Medical Ethics Committee (MREC 2017528-5276) was obtained, as in compliance with the Helsinki Declaration.

Result

A total of 18 participants who consisted of 13 males and 5 females with a mean age of 52 agreed to participate. **Table 1** provides the characteristics of the participants. Thematic analysis of the FTF in-depth interview transcriptions resulted in two themes and six subthemes that represent the participants' perceptions of VCO. **Table 2** presents the said themes and subthemes.

Theme 1: Physiological effect

The perception and experiences of ACS participants in this study after consuming VCO elicited the theme of physiological effect. Most of the participants experienced a change in their physiology, especially in their digestive system. They felt and expressed that VCO was able to reduce their appetite, hence reduced their body weight. This is the reason why their body weight had reduced at each visit during the 90 days of consuming VCO in the quantitative phase. As they experienced a decrease in appetite, they also reported ease of feeling full once having had a meal. They noticed, on their daily diet, that once they were full,

Table 1 Demographic characteristics of participants (n=18).

Characteristic	n (18)	Percentages
Age		
25 – 35	2	11.5%
36 – 45	4	22.5%
46 – 55	6	33%
56 – 65	6	33%
Gender		
Female	5	27%
Male	13	73%
Other comorbid		
ACS alone	8	45%
ACS with HPT & DM	3	16.5%
ACS with HPT	4	22%
ACS with DM	3	16.5%
Medications		
Statin with antiplatelet	8	45%
Statin with antiHPT, antiDM, and antiplatelet	3	16.5%
Statin with antiHPT and antiplatelet	4	22%
Statin with antiDM and antiplatelet	3	16.5%

Table 2 Themes and subthemes.

Themes	Subthemes
Physiological effect	1. Decrease in appetite 2. Easy to feel full/satiety 3. Perceived reduction in body weight
Psychological effect	4. Energetic 5. Active 6. Healthy

they no longer felt hunger. All of the participants expressed that this theme was consistent with the quantitative finding in this study, of which their body weights reduced at each visit.

Three subthemes derived from the theme of physiological effect namely, decrease in appetite, easy to feel full/satiety, and perceived reduction in body weight. The following explanations provide more detail about each subtheme.

Decrease in appetite: The decrease in appetite is one of the subthemes that fall under the theme of physiological effect. Majority of ACS participants expressed having a smaller appetite when consuming VCO for 90 days. Besides, participants also mentioned about always feeling full and the ease of feeling full/satiety. Resulted from the above effect, participants reported on reduced body weight when consuming VCO for 90 days. Below are the selected quotes from participants during the FTF session that reflect the subtheme of decrease in appetite.

“When I took Supplement A, I felt a decline in my appetite. I still felt hungry though, but I just don’t have the appetite.” (FTF1, P1)

“When I took Supplement A, I felt okay since there’s a decrease in my appetite, rarely felt like eating and I always felt full. I felt okay, my body is okay and I felt comfortable.” (FTF 1, P2)

Easy to feel full/satiety: Easy to feel full/satiety is another subtheme under the theme of physiological effect. Majority of

the participants frequently mentioned about the ease of feeling full and less hunger during the 90 days of consuming VCO. The quotes below support the said subtheme.

“... I felt always full even after woke up in the morning. I always felt full until I myself feel like eating although I have no appetite.” (FTF 1, P2)

“I don’t eat that much anyways, but I can say that I stayed full longer after each meal after taking the supplement.” (FTF 2, P11)

“I think my stomach is easily full and I think our digestive system is good.” (FTF 3, P15)

Perceived reduction in body weight: The third subtheme under physiological effect is the perceived reduction in body weight. This subtheme was relevant to all participants (those involved in the FTF interview) where they spoke of it happily. Complemented by quantitative data, those involved in the FTF interview appeared to have lost weight consuming VCO in the quantitative phase. The following are the quotes that reflect the said subtheme.

“You can put it that way. I could easily control my body weight now.” (FTF2, P9)

“I could say that my body has become lighter a bit.” (FTF 2, P11)

“... because I felt my appetite was good with it and not increasing my body weight.” (FTF3, P15)

Theme 2: Psychological effect

The perception and experiences of ACS participants had allowed for the theme of psychological effect to emerge. Majority of participants described VCO having a positive effect on their life. There are three subthemes covered under this theme namely, feeling energetic, feeling active, and feeling healthy.

Feeling energetic: The subtheme of feeling energetic falls under the theme of psychological effect. The participants involved in the FTF interview argued that VCO had them feeling energetic when going about their daily activities when consuming it for 90 days. The participants commented as follow.

“... I can feel that my body feels active and energetic.” (FTF2, P6)

“I felt more energetic and active when I woke up in the morning.” (FTF 2, P9)

“... I also can drive as far as to Ipoh now without feeling sleepy during the journey. Before this, I easily feel sleepy, especially during afternoon but not anymore. If I drove to Ipoh at night, I still could stay up until 10 pm and still stayed fresh.” (FTF2, P10)

“I feel more energetic, I have more appetite and my process of defecation is normal. I don’t have any shortage of breath when I climb up the stairs. Not like before, where I got tired easily whenever I climbed the stairs.” (FTF 3, P13)

Feeling active: The next subtheme is feeling active. The participants perceived that VCO helped them be active when performing daily activities. They also stated that the active feeling was noticeable even though there was less calorie intake. Below are the statements that portray the subtheme of feeling active.

“I don’t have any shortage of breath when I climb up the stairs.”

Not like before, where I got tired easily whenever I climbed the stairs.” (FTF 3, P13)

“... felt slightly energetic when we took the VCO but we are not sure whether it was caused by the VCO or because we were active during those phase.” (FTF3, P16)

“After taking VCO actually it is very helpful to me, first... I can do more activities, for example, I can play badminton, before this I am sure cannot play badminton easy tired, even walking in 6 minutes I cannot... I was very quick to get tired, now... I can go walking more than 15 minutes or half an hour without feeling tired. Even playing badminton also I can, no disturbance in sleeping. So... it really helps to me.” (FTF 3, P17)

Feeling healthy: The last subtheme under psychological effect is feeling healthy. Participants agreed that VCO made them feel healthier after consumption. The participants believed that their heart condition improved from consuming VCO. The FTF interview participants recounted as follows.

“Before this, I could easily get caught out of breath, but praise to Lord that after taking Supplement A, it lessens a lot.” (FTF 2, P10)

“Now, I can go to the mosque earlier. I can also do house chores like sweeping my house, and climbing up to two stories of stairs.” (FTF 2, P10)

“After 3 months taking the VCO, I felt better now. Just not like before, I was having like burning, didn't feel good.” (FTF 1, P4)

“Yes... it is really helpful to me, as I said earlier, I can do whatever activities that I liked without felt easily tired. I can go up stair actually for 1 or 2 story easily, 4 levels a bit difficult... but consider okay for me. Now I can play badminton.” (FTF 3, P17)

From the FTF interview, thematic analysis was used to analyze the data collected, which was later organized into the themes and subthemes. All themes and subthemes are explained, followed by quotes that reflected the meaning of the subthemes. As a conclusion, all participants that were involved in the FTF interview believed that VCO has a positive effect on their health and can improve their quality of life.

Discussion

The present study is, to our knowledge, the first study to report on the feedback on VCO consumption from the consumers' perspective. Two themes emerged from the interview namely, physiological effect and psychological effect. In this study, the loss of appetite and perceived loss of body weight were the most prominent feedbacks from the participants. These feelings resulted from the action of lauric acid (LA) in the VCO [3]. VCO is a saturated fatty acid with a lauric acid content of more than 45% - 53% of the overall fatty acid composition [3,4]. Lauric acid is categorized as medium-chain triglyceride (MCT) with a 12-carbon atom chain, thus having many properties of a medium-chain fatty acid [5,6].

Recently, coconut fats and oils had received negative press because of their high levels of saturated fat, and there was advice to avoid using it due to its effect on raising cholesterol level (Neelakatan et al., 2020). This review has included all studies in

coconut oil, both regular and virgin, which causes a bias because regular coconut oil and virgin coconut oil are different in term of their fatty acid composition [7,8]. Without denying that the regular coconut oil has major content of saturated fatty acid, there acknowledges that the content of saturated fatty acid in VCO is vastly different. This is a result of the process of extracting VCO without the application of heat, which keeps the content of fatty acid beneficial to health [5]. To expound, the LA component can remain in the oil and thus deliver its health benefits. In addition, LA can also be categorized as MCT with the carbon chain of 12 [3,9]. The action of MCT in health is not controversial as it can promote rapid energy and can control body weight [3,4,10,11]. Since LA and capric acid are already listed as MCT components, VCO, by default, is an example of MCT, delivering similar health benefits.

Based on the response, satiety and perceived loss of body weight accounted for the majority of participants. About 80% of the participants expressed a similar response. As reported in previous quantitative studies, satiety or feeling of fullness results from the action of MCT that is found in the VCO. Capric acid and LA are two main components in VCO that are classified as MCT. The digestion of triglyceride oils involves both physical and enzymatic processes. Virgin coconut oil, which has a large proportion of MCT, is more water-soluble and is more rapidly hydrolyzed by lipase than other vegetable oils, which are predominantly LCT. The rapid absorption has also been linked to increased satiety, as MCT is fully absorbed upon ingestion, as opposed to LCT, where some remain in the intestinal lumen until subsequent food intake (Maher).

This study also reported on the significant reduction of participants' body weight from baseline to day 30 in the quantitative phase. As stated earlier, lauric acid can cause rapid oxidation and provides rapid energy, hence it can lead to satiety or feeling full [3]. In principle, once an individual has less oral intake, LA will automatically reduce the blood glucose in the body. When there is no glucose to metabolize in the body, it will result in the fall of serum glucose level [12]. This is reflected in the participants' body weight where the VCO group had reduced body weight after 30 days of consuming VCO. Apart from that, as found out through a simple conversation, the majority of VCO participants expressed satiety when consuming VCO [13]. In contrast, in the study by Kai et al., there reported no changes in body weight among their 20 obese participants. This could be due to the small number of samples, hence the study was unable to detect the difference. On top of that, obese participants that were selected may have difficulty reducing body weight due to the physiology of fat in their body. The study by Longo et al. (2019) found that obese people had difficulty losing weight due to white adipose tissue dysfunction. The white adipose tissue may become severely dysfunctional and may not expand properly to store the excess energy. This induces ectopic fat deposition in other tissues that regulate glucose homeostasis, an event commonly defined as “lipotoxicity”. This mechanism leads to systemic insulin resistance and an increased risk of type 2 diabetes mellitus [14]. Numerous deleterious effects have been associated with the unhealthy expansion of the WAT, including inflammation, fibrosis, hypoxia, altered adipokines secretion,

and mitochondrial dysfunction [14]. Due to these unhealthy conditions, obese people suffer from the scarring of their fat tissue, which may make it harder for them to lose weight.

About 80% of participants reported feeling energetic, active, and healthy while consuming VCO. The reason is that the MCT component in VCO is rapidly absorbed and metabolized in the liver, whereas fatty acids are metabolized for energy in the mitochondria. This action can cause the production of rapid energy. Depending on its chain length, a fatty acid can cross the mitochondrial membrane either by passive diffusion or by carnitine-assisted transport. Gharlid and colleagues (1996) showed that lauric acid is rapidly transported across the membrane bilayer by non-ionic passive diffusion. There is evidence to suggest that short-term consumption of MCT increases energy expenditure (EE) in humans.

Conclusion

Overall, studies have shown that lauric acid has properties similar to capric acid (C10) and is distinctly different from palmitic acid

(C16). Further, the metabolic properties of triglycerides that contain C6–C12 are distinctly different than triglycerides with fatty acids C14 and longer. Numerous beneficial effects have been claimed for virgin coconut oil. This review on lauric acid provides mechanistic support for many of the beneficial effects of virgin coconut oil. Finally, because MCFA (C6–C12) shows sufficiently different metabolic and physiologic properties to LCFA (\geq C14), the chain length should be specified when using the term “saturated fatty acid”.

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Conflict of Interest and Funding

The authors declare that they have no conflict of interest in this study.

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