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Abstract
The experiment was laid using five Alfalfa accessions with the objective of evaluating forage biomass yield, chemical composition and *in vitro* dry matter digestibility at Andassa Livestock Research Center, North Western Ethiopia. The experiment was done under irrigation after the plot properly and finely prepared using randomized complete block design with four replications. During planting 100 kg/ha diammonium phosphate (DAP) was applied. Between January 2013 and June 2013, two cuts were taken on average at an interval of 65 days between harvest. Moreover, in 2014 two cuts were also taken. Significantly higher ($P < 0.05$) herbage dry matter yield was recorded for FG-9-09, FG10-09, Magna788 and Magna 801-FG, while herbage yield was slightly lower for *Hairy Peruvian*. Plant height was higher ($P < 0.05$) for FG-9-09, medium for FG-10-09, Magna 788 and *Hairy Peruvian* and lower for Magna 801-FG. Crude protein content was higher ($P < 0.05$) for Magna 801-FG, FG-10-09, Magna 788 and *Hairy Peruvian* but lower for FG-9-09. *In vitro* dry matter digestibility ($P < 0.05$) was significantly lower for FG-9-09, with the remaining four accessions exhibiting comparable values for both parameters. FG-9-09, FG-10-09, Magna 801-FG and Magna-788 gave better dry matter yield as compared to standard check (*Hairy peruvian*) indicating their potential for better biomass and nutritional value as protein source for livestock feed under Andassa condition and other areas with similar agro ecologies.
Key words: Alfalfa, Dry Matter Yield, Plant Height, Crude Protein, *In Vitro* Dry Matter Digestibility
[Full text-PDF]

Review

Morality and Ethics: A Brief Review.

Khatibi M and Khormaei F.

J. Life Sci. Biomed., 6 (3): 66-70, 2016; pii:S225199391600011-6

Abstract
Morality, originated from the Latin word moralitas (which means manner, character, and proper behavior), is the differentiation of intentions, decisions, and actions between those that are distinguished as proper and those that are improper. Morality is the moral beliefs, views, and attitudes of given individuals, societies, and groups. Ethics is systematic reflections on moral views and standards (values and norms) and how one should assess actions, institutions, and character traits. Ethics (also known as moral philosophy) is the branch of philosophy which addresses questions of morality. The word "ethics" is "commonly used interchangeably with 'morality,' and sometimes it is used more narrowly to mean the moral principles of a particular tradition, group, or individual. This review is a comprehensive introduction to the theories of ethics. These are egoism, Kantianism, hedonism, utilitarianism, naturalism and virtue theory, contractualism, existentialism, and religion. Throughout the review, the exposition draws on examples from great moral philosophers such as Aristotle, Kant, and Mill. Many of the greatest figures in Western philosophy from Plato to Wittgenstein have wondered what the good life for a human being consists in, what makes it good and whether it is being so has any cosmic significance. A critical view of the subject is presented at the end of this review.
Keywords: Morality, Ethics, Manner
[Full text-PDF]

Research Paper

Evaluation Energy Efficiency in Biodiesel Production from Canola; A Case Study.

Abshar R and Sami M.

J. Life Sci. Biomed., 6 (3): 71-75, 2016;
pii:S225199391600012-6

Abstract
Today fossil fuels are the main source of energy; however, it is becoming increasingly unlikely that fossil fuel supply will be able to meet growth in demand of energy in nearly future. The production of biofuel from farms products has been promoted as a replacement for fossil fuels. Nevertheless the debate over the energy balance of biodiesel is ongoing. In this paper, we focus on analyses of energy efficiency of rapeseed biofuel production in a case study in Khuzestan province of Iran. Our results showed that, in term of energy, canola is a reliable source of energy as biodiesel. The energy ratio in this process was rather higher than one (1.08) and net energy was obtained as 2582.37 Mj per hectare of canola farming. However this value in not high, by considering byproducts of canola farming it can be suggested as a sources of future energy.
Key words: Biodiesel, Canola, Energy analysis
[Full text-PDF]

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Results of Portosystemic Shunting in Patients with Liver Cirrhosis

Nazyrov Firuz Gafurovich, Devyatov Andrey Vasilyevich, Babadjanov Azam Khasanovich*, Raimov Salakhiddin Abdullaevich, and Salimov Umid Ravshanovich

JSC "Republican Specialized Center of Surgery" named after Academician V. Vakhidov. Tashkent, Uzbekistan.
*Corresponding author's email: azam746@mail.ru

ABSTRACT: This article presents the consolidated results and competitive prospects of portosystemic shunting (PSSh) in patients with portal hypertension (PH). During a 40-year period, in the Department of Surgery of portal hypertension and pancreatoduodenal zone of the JSC "Republican Specialized Center of Surgery (named after Academician V.Vakhidov"), traditional PSSh (in the traditional variant) was performed on 925 patients with PH. Based on the literature review, as well as our own experience, competitive prospects of traditional PSSh, endoscopic techniques and transjugular intrahepatic portosystemic shunting, in patients with liver cirrhosis, were defined. For patients with Child-Pugh functional class A and B, and in the absence of immediate prospects of transplantation, traditional operations, such as central partial or selective PSSh, should be considered as an actual competitive alternative.

Key words: Liver Cirrhosis, Portal Hypertension, Bleeding From Esophageal And Gastric Varices, Portosystemic Shunting.

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INTRODUCTION

Currently, liver cirrhosis (LC) with portal hypertension (PH) is one of the leading causes of morbidity and mortality worldwide. Due to the high incidence of viral hepatitis, as well as the steady growth of factors such as alcohol, drugs or toxic liver injury, its social importance is steadily increasing in many countries, [1-3]. Although the average age of patients with LC in Europe and the USA is 55 ± 10 years, in Central Asian region tendency to "rejuvenation" of the disease, up to 25 years old and younger [1].

Often determined by the fatal prognosis, the two main complications of LC are: bleeding of esophageal and gastric varices (EGV) and progression of liver failure with encephalopathy. A group at risk for potential EGV bleeding includes 20–50% of patients with PH. According to different authors, mortality associated with hemorrhagic syndrome ranges from 30% and above, and with the development of a hepatic coma, that rate rises to 80–90% [4-6].

The only radical method of treatment for these patients is liver transplantation. However, liver transplantation is not only a potential possibility for radical treatment, but it is always interfaced with needs to resolve a number of difficult questions; among which are medical, social and organizational issues, both from the government point of view (juristic and legislative based), as well as from the practical health care point of view (hospital equipment, human resources, etc.) [7, 8]. Thus, even in countries with an advanced transplantion program, liver transplantation requirements are only, on average, 25-50% met [9-11]. Among the patients in the waiting list, 10–24% die before transplantation. More than a quarter of these deaths are due to esophageal and gastric varices bleeding. For this reason, prevention of complications from cirrhosis in patients with sufficient functional liver reserve is relevant [10]. Such high mortality rates necessitate the implementation of interventions aimed at preventing hemorrhagic syndrome. Among these, endovascular and surgical decompression of the portal system are considered the most optimal methods [12, 13].

It should be noted that, currently, interest in the traditional portosystemic shunt (PSSh) method has decreased slightly. On one hand, this decrease is caused by the widespread introduction of minimally invasive techniques, among which priority is given to endovascular interventions (TIPS) and endoscopic techniques (ligation and sclerotherapy), and on the other hand, by a influence on the demand of bypass surgery, which has exerted a vast introduction of radical treatment for LC [14].

Numerous studies show that for patients of Child-Pugh functional class "A" and "B", PSSh must still be considered as an optional method for portal decompression, especially in patients with inefficient pharmacological and endoscopic treatment, and who lack the indication or possibility for liver transplantation.

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During indication observance, PSSh was proved to be an effective alternative to other methods, both in terms of preventing EGV bleeding as well as in the survival rate of patients with liver cirrhosis [15, 16]. Therefore, different variations of traditional decompressive surgery still remain as a method of choice in the leading hepatology centers worldwide [17].

Thus, the development of vascular surgery for PH, both as a stage of preparation for liver transplantation, as well as a part of a possible method for preventing EGV bleeding, remains as an urgent problem to solve in modern hepatology.

MATERIALS AND METHODS

During the period from 1976 to 2015, PSSh using the traditional technique was performed on 925 patients with PH in RSCS named after academician V. Vakhidov (Tashkent, Uzbekistan). The etiological factor of PH in 867 (94.3%) patients was LC, whereas in the remaining 58 (5.7%) patients it was an extrahepatic form of PH. The results of 689 PSSh performed in RSCS named after academician V.Vakhidov (Tashkent. Uzbekistan) from 2001 to 2015 in patients suffering LC were analyzed.

Statistic analyses was held using MS Excel with Systat Software (USA) program software. Quantitative data was submitted as mean (M) ± standard deviation (m). The significance of differences was defined according to Student criteria. Difference were defined as statistically veracious in $p<0.05$. Mortality analyses was measured according to Kaplan-Meier.

The average age of all patients was 28,5 ± 0,42 years EGV bleeding occurred in 483 (70.1%) patients, in other cases, PSSh was performed as a prophylactic measure due to the high risk of it being developed. Different types of PSSh were performed on all patients (Table 1). Among the types of bypasses performed, distal splenorenal shunts (DSRSh or Warren shunts) were performed on the majority of cases (350). In the other 339 cases, the following central type PSSh were performed: proximal splenorenal shunt with splenectomy (PSRSh), latero–lateral splenorenal shunt (LLSRSh), splenosuprarenal shunt (SSRSh), and H–shaped splenorenal shunt (H–SRSh)

Table 1. Type of portosystemic shunt performed in patients with PH

Type of operation	LC	
	Number	%
Distal splenorenal shunt (Warren)	350	50,8%
Different types of central bypass	339	49,2%
Total	689	100%

RESULTS

The current status of surgery for PH in Uzbekistan is characterized by an individualized approach, which aims to choose the most optimized method of preventing complications, depending on factors such as: age of patient, risk level of developing hemorrhagic syndrome, portal pool angioarchitectonics features; By putting to use the technique of portocaval decompression limiting, when forming the central type of decompression. This technique was developed in 1998 (patent №IAP03265). The essence of the developed technique is the application of a calibrated restrictive cuff (vascular prosthesis), passed on top of the anastomotic vessel, when performing termino-lateral and latero-lateral shunting types, or on top of the insertion from the internal jugular vein, when forming H-SRSh.

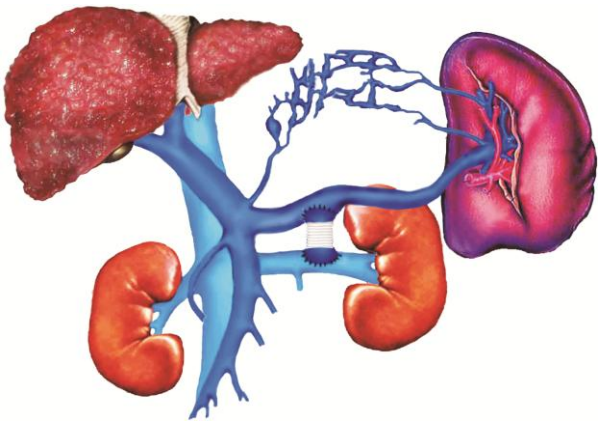

Figure 1. Scheme of PSSh with restrictive cuff

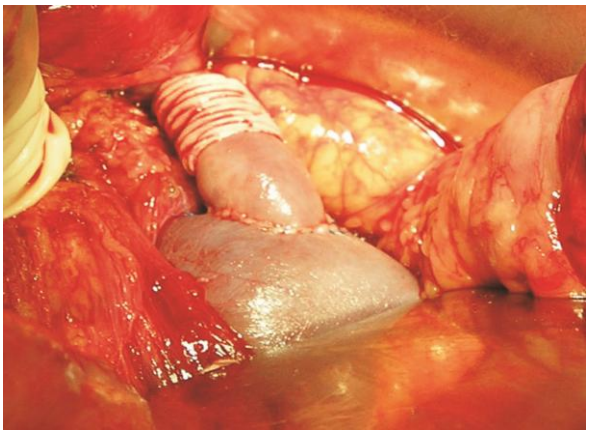

Figure 2. PSSh with restrictive cuff

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Postoperative complications

Acute liver failure development (ALF) was one of the severe postoperative complications found in patients after central PSSh was performed. If considered in chronological order, over the last 5 years of monitoring , ALF frequency decreased to 8.8% in patients with central bypass and to 7.7% in patients with Warren procedure. Before the year 2000, however, frequency of ALF ranged between 25-30%. Similar data was obtained for other postoperative complications.

Hepatic encephalopathy (HE) frequency in the central anastomosis group decreased from 40% (before the year 2000) to 13.6% and in Warren procedure group (DSRSh group) from 33 down to 9.4% (Fig. 3).

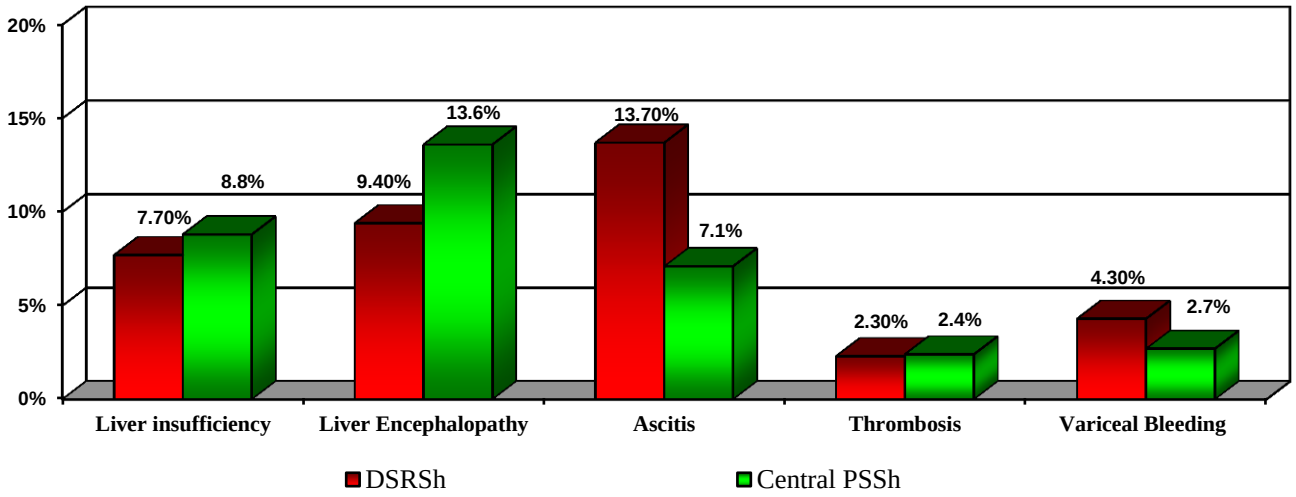

Figure 3. Frequency of specific complications after central and selective PSSh

Of course, in the distant period of observation (3-5 years) mentioned complications were of fundamental importance. However, it is possible to ascertain a significant improvement in the quality of the surgical correction of PH by individual approach for bypass type and if necessary, formation of the partial discharge, which allows to preserve residual hepatofetal blood flow at an acceptable volume level. This explains the low incidence of ALF in 5 years follow up. Also, thrombosis minemalization became possible because of the formation of a full size anastomosis chamber and limiting of vessel diameter.

Bleeding

Endoscopy was performed on 2nd – 3rd month after operation in order to evaluate the effectiveness of decompression. Regression of varicose veins was found in the majority of cases. However, within the central bypass group there was no significant difference in the decompressive effect and regression was less pronounced in patients who had undergone the Warren procedure. A good decompressive effect (varicies of 1st grade and less) was observed in 75.0% of patients in the total central bypass group, and in 72.5% of patients in the partial central bypass group. Such data reveals an adequate decompression for both options. However, after the Warren procedure the rate of decompression was observed in 46.8% of patients with up to 3 months monitoring. The aforementioned is possibly due to the selective decompression of the slow restructuring of portal circulation.

Mortality

With regards to mortality, acute liver failure was a major fatal complication, presenting in more than 70% of cases. In the last period of follow-up on the background of preventive bypass with preservation of hepatofetal flow, mortality rate in the immediate postoperative period decreased to 2.7% for central bypass patients and to 3.9% for selective decompression (14,8% until year 2000).

Among the factors that most significantly influenced the decline of mortality rates in cirrhotic patients with PSSh were: 1) indications and contraindications for PSSh were fundamentally reviewed, 2) partial central (Johansson, K., 1989) and selective (Warren W.D. 1967) types of anastomoses were widely introduced, 3) the original procedures of portocaval discharge limitation were introduced, 4) the number of total central anastomoses was decreased to a minimum, 5) precision surgical technology with optical amplification during

vascular anastomosis formation was used, and 6) range of liver drug therapy support during the postoperative period was substantially expanded.

The survival analysis held in each of the stratified groups revealed general and specific (unique to a certain type of PSSh) trends in mortality. Overall survival rate of patients after Warren procedure was as follows: 87.5% for up to 1 year , 74.4% for 3 to 5 years, and 71.3% for more than 5 years (Figure 4). Thus, the highest mortality rate was observed during the first three years of follow up. Survival rates of patients after central PSSh were characterized by the absence of immediate postoperative mortality as well as the largest percentage (69%) of patients with a 10-year survival rate (Figure 5).

The main cause of general postoperative mortality in the 5 – years follow up, regardless of the PSSh procedure performed, was cirrhosis activation with expansion of hepatocellular insufficiency and further decomposition of the patient? and development of the expanded hepatocellular insufficiency.

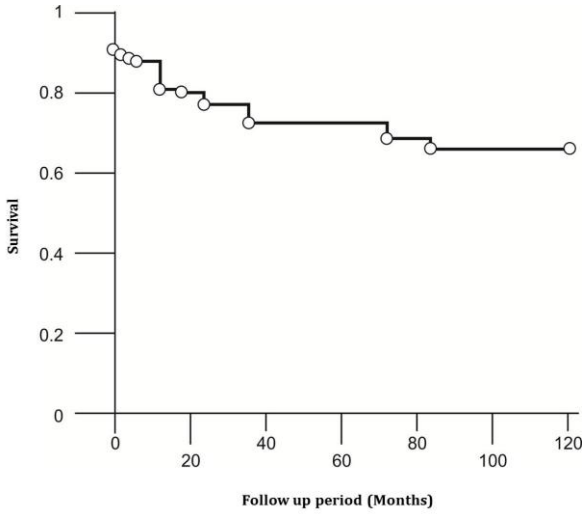

Figure 4. Survival rate after Warren procedure

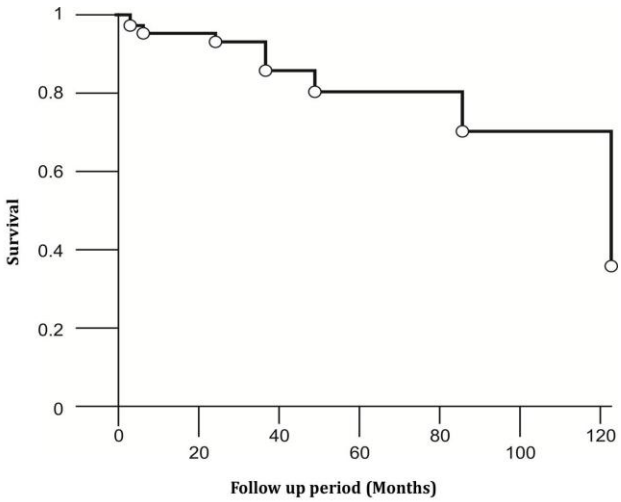

Figure 5. Survival rate in patients after central PSSH

Quality of life

To assess "quality of life" the Chronic Liver Disease Questionnaire (CLDQ), designed by Younossi et al. (1999) for patients with chronic liver disease, was used. The CLDQ is the first specific document for assessing quality of life. It includes 28 items distributed by the following six domains: 1) abdominal symptoms, 2) tiredness, 3) systemic symptoms, 4) activity, 5) emotional state, and 6) worries. Answers from respondents included seven possible options ranging from “all the time” to “never”. Patients answer all questions and the middle amount of points are determined with a maximum of 196 points possible. In some domains points are defined by various questions (from 1 to 7 points). In summary, the higher the score obtained, the better the “quality of life” of the patient.

This “quality of life” analysis was performed in 248 patients with LC after PSSh. To compare the "quality of life" indicator, 50 people were included in the control group and were surveyed by the mentioned principle. It should be noted that for the purity? of the study, the control group included healthy individuals matched for age (27.9 ± 0.9 years), gender and location of living.

The “quality of life” analysis before and after PSSh is of particular interest. The group of 32 patients with liver cirrhosis was analyzed and their quality of life was analyzed before and after PSSh. Besides, all patients before PSSh, during the previous month, had a bleeding from EGV episode, which was stopped conservatively.

Results of the “quality of life” questionnaires showed that, before PSSh, indicators were significantly worse than in the periods immediately following the operation. The mean total preoperative score was 114.1±1.4 and in the term of three months after PSSh, it increased to 127.5±1.7. The latter score significantly differed from the baseline indicator ($P < 0.001$). The increased score observed pre- and post-PSSh was caused not only by the decompressive effect resulting from the procedure, but also by the positive emotional and psychological state of postoperational patients. Patients also paid special importance to the objective indicators of their status improvement. Regression of PH and its complications causes not only the decrease of EGV bleeding risk, which, by itself, has a subjectively positive reflection in the neurological state of patients, but it also changes other objective criteria for assessing their own health.

In particular, the reduction or disappearance of the edematous-ascitic syndrome, which an etiologic factor was not only a protein synthetic? failure of hepatocytes, but also an elevated PH. In addition, the reduction of portal pressure has a positive effect on the discomfort associated with splenomegaly syndrome, since PSSh facilitates the reduction of spleen size. Further, mean scores were examined by main domains. Within the period of up to three months following the procedure, the lowest scores were obtained by the following domains: "tiredness": 4.0±0.03, "activity": 4.4±0.03; "emotional state": 4.2±0.03, and "nervousness": 4.1±0.07. With all these indicators, values differed from those of the control with a high degree of accuracy (P <0.001). Subsequently, gradual, progressive deterioration of the quality of life indicators was observed in all the domains. The most pronounced deterioration was for the domains of "activity" and "emotional state", by which, during practically all periods, the mean score worsened reliably (P <0.05-0.001), unlike other domains, where there had been periods without considerable reduction.

Comparison with the control was more pronounced and within more than five year follow-up, accounted just for 41.0% in comparison to the control by the domain «nervousness», and maximum 62.3% - to the control by domain «activity» (Figure 6).

In up to 5 years follow up after PSSh, progression of the pathological process in the liver causes deterioration of the "quality of life" indicators. Using the physical state scale of the CLDQ questionnaire, it is from 78.6%, relative to the control value of 100%, to 55,3% (P <0,001) within the three-month period after surgery. With the psychological state scale, these values go from 72.4% to 48,8% (P <0,001) within more than five years of surveillance.

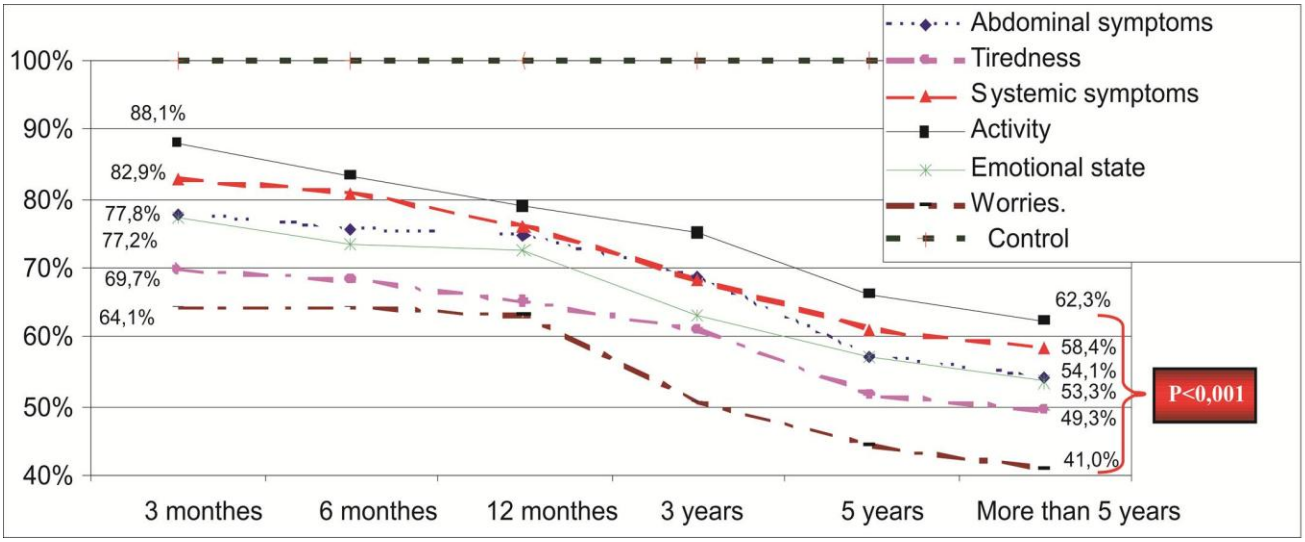

Figure 6. Quality of life dynamics relatively to the control group by the main domains of CLDQ

MELD

Not less interesting is the study of the dynamics of the Model for End-Stage Liver Disease (MELD) score after PSSh. This scale is widely used in many countries to assess the optimal timing for liver transplantation. Unfavorable life prognosis is associated with a MELD > 15-18.

The pre-surgery mean score was 10.19±0.24 points on the MELD scale and 7.13±0.17 points by the Child-Pugh classification. This score was reliably less than in the liver transplantation group. Thus, reevaluation to readdress the need for liver transplantation in the dynamics had to be carried out at least 1 time per year (MELD score less than 10) in 62.5% of patients, at least 1 time in 3 months (MELD 11-18 points) 37.5% of patients.

In the immediate period after traditional PSSh there was no significant deterioration in the MELD scale (10.19 ± 0.24 versus 10.94 ± 0.23 points). The progression of liver failure with a high degree of activity was found in 6.3% of patients within one year after surgery. In another 6.3% of patients, EGV bleeding accrued: in one case due to shunt thrombosis and in the other case from gastric erosions due to portal gastropathy. Six months after PSSh, 3.1% of patients died due to progressing liver failure.

One year after operation, the MELD value changed from 10.86±0.22 points to 11.79±0.32 points (P <0.05). In addition, the MELD value higher than 15 points was found only in 10.3% of patients, they formed a group of patients that needed liver transplantation 15.6%.

DISCUSSION

At present, interest for traditional PSSh has markedly fallen. On one hand, this is due to the widespread use of minimally invasive techniques, including endovascular interventions, like TIPS, as well as endoscopic techniques such as ligation and sclerotherapy. On the other hand, introduction of radical treatment in many countries made a certain influence on the demand of PSSh producing [16].

Furthermore, Rosemurgy et al. [17] found that widespread use of TIPS continues although there is a certain lack of direct evidence of its effectiveness prior to surgical bypass.

Authors presented results of an 18-year follow-up of a prospective randomized study. Patient survival was significantly greater after traditional PSSh, as it was also for patients with a Child-Pugh class "A" (91 vs. 19 months) and Class "B" (63 vs. 21 months). Adequate shunt patency after PSSh was 45 months, whereas it was only 22 months after TIPS. The authors state that patients with Child-Pugh functional class "A" and "B" should have traditional bypass surgery rather than TIPS, leaving TIPS only for patients who present an initially severe (grade "C") condition [17].

Interesting results were obtained in a randomized clinical trial that evaluated the efficacy of emergency TIPS vs PSSh. The study compared efficiency of TIPS vs. PSSh as a way to stop acute bleeding in emergency situations and was conducted in 154 patients with liver cirrhosis of all Child-Pugh severity groups [18].

PSSh showed the best results with 97.4 % hemostasis and less frequent encephalopathy. Additionally, life expectancy was three times greater for patients with PSSh than with TIPS (uncovered). And, despite the recommendation of many surgeons who suggest that PSSh is a surgery that should be carried out in planned fashion in order to prevent bleeding, authors recommend the use of this intervention as a means of treatment for acute bleeding. It should be noted that in another study by Orloff et al. [19] the advantages of PSSh compared to endoscopic procedures for bleeding control and recurrence prevention were also demonstrated. Puhl et al. [20] believe that PSSh should be considered as an optional method in portal pressure decompression, especially in patients with insufficient endoscopic or drug therapy, as well as in patients with the absence of transplantation indications. This also applies to the secondary prevention of rebleeding in patients with good liver function.

According to the interstate archive data analysis made in the United States the following reasons for TIPS were identified: First of all, during 4 years of observation (2000-2003) in the second most populous state (Florida), only 165 PSSh where performed (an average of about 41 shunts in a year). On the contrary, TIPS where performed in 1486 patients among 1321 patients that was nearly 10 times greater. Secondly, number of centers offering the TIPS procedure was almost 10 times higher (more than 100). In general, mortality after these procedures was almost identical (11.0% TIPS versus 12.7% PSSh). Thus, the cost of TIPS was significantly lower ($62,000 vs. $107,000). However, conducting analysis, authors claim that if the mortality after TIPS procedure was due to the severity of patients and did not depended on the level of the surgical hospital, the mortality rate after the traditional PSSh depended both on the level of the medical center and the surgeon's experience. Also, in spite of the advantages of the TIPS procedure, the authors summarized that, in long-term observation, traditional PSSh gave more superior survival rate prospects [21].

Finally, a retrospective analysis by Elwood et al. [16] broth that the Warren procedure should be considered as the first line approach for patients with high risk of bleeding in Child-Pugh classes "A" and "B", especially when endoscopic sclerotherapy is ineffective or in those cases where liver transplantation will not be needed within 5 years.

The effectiveness of the Warren procedure made under recommended readings is higher than that of TIPS. This option avoids the need of multiple stent patency monitoring and thus resenting [16]. According to several clinical trials, this TIPS technique can be complicated, in 75-82% of patients, with endovascular graft dysfunction or thrombosis in a period from 6 months to 1 year after surgery [16, 19].

It should be noted that the accumulated experience of different hepatology schools determines the selection of a particular method, thereby giving continuity to the centers' own results. For example, in some studies only the initial state of compensated liver function is considered as an indication for PSSh. In contrast, other authors only recommend alternative therapies. Thus, according to Semenova [22], endoscopic bleeding prevention is of minimal risk, although it does not allow sustainable long-term results to be achieved. In turn, the Warren procedure has a clear advantage with respect to long-term effects, but has a higher risk of bleeding. In this connection, the Warren procedure is preferable for patients with compensated liver cirrhosis without a history of surgery for PH. When liver cirrhosis is in subcompensation and patient has a history of surgical treatment for PH, or suffers from severe comorbidity, endoscopic sclerotherapy should be carried out as first choice of treatment [23].

In another study, complications after PSSh were observed in 27.3% of cases, with a postoperative mortality of 4.5%. The author recommends H-type splenorenal bypass with a vascular graft insertion for patients with Child-Pugh Class A and a blood flow of 1000 ml/min through the portal vein. In patients with Child-Pugh class "B", an inactive or low activity phase, and portal vein blood flow less than 1000 ml/min, the Paciora procedure is recommended. In decompensated (Child-Pugh class "C") patients, the recommendation is to refrain from active surgery [23, 24].

In a study by held I.I. Dzidzava, the survival rate of patients after endoscopic ligation in the one year follow-up was 57.3%; in three years, 38%; in five years, 33.1%. In turn, long-term results in PSSh patients are characterized by the absence of rebleeding, thrombosis, and satisfying survival rates: one year, 84.8%; 3 years, 68.6%; 5 years, 51.3%; 10 years, 25.8%. The authors conclude that the performance of selective and partial PSSh is indicated in patients with liver volume more than 1200sm^3 and positive values of the liver dysfunction index [25].

Given the above, it can be concluded that, over the past decade, the development of minimally invasive methods, in order to prevent bleeding, has led to a decrease in the number of traditional PSSh performed. However, the conducted literary analysis shows that, even in centers which perform all kinds of operative treatments, including radical ones, traditional decompression of the portal system remains the method of choice. Furthermore, using adequate approach to indications, the results obtained with the mentioned procedure of choice are greatly superior in comparison with those of alternative endoscopic methods.

CONCLUSION

At the present time, leading hepatology schools have different views regarding which is the best choice for bleeding prevention. In most cases, surgeons prefer minimally invasive techniques, among which endoscopic procedures and TIPS are the most popular.

Nowerdays liver transplantation is the only radical treatment for liver cirrhosis, though for countries without transplantation service portosystemic shunts remain as an actual method of rebleeading prevention. In terms of highly developed transplantological service, minimally invasive techniques are optimal because bleeding itself can be viewed as an indication for liver transplantation. Additionally, performing TIPS or an endoscopic procedure provides the necessary time interval to find an organ donor and prepare the patient for radical surgery. Also in favor of minimally invasive technologies is the fact that these procedures are available to patients who are in serious, critical condition and abdominal surgery is associated with an unnecessary risk. On the other hand, when TIPS vs. PSSh results are compared, it can be seen that endovascular techniques have their negative side as well. The endovascular techniques have a higher rate of shunt thrombosis and encephalopathy compared with traditional PSSh.

Although endoscopic techniques is of a little risk in bleeding prevention, sustainable, long-term results are not always achieved. With this in mind, selective or partial portal decompression in traditional PSSh provides the best long-term indicators.

Obtained own findings objectively prove the effectiveness of PSSh in terms of hemorrhagic syndrome prevention with a high survival rate, as well as its important role in decreasing the need for liver transplantation. In the absence of bleeding risk, the possibility for dynamic patient monitoring, drug therapy and thus lengthening of the time period becomes opened before the transplantation what should be carried out in decompensated functional state of hepatocytes.

Thus, for patients with Child-Pugh functional class A and B, and in the absence of immediate prospects of transplantation, traditional operations, such as central partial or selective PSSh, should be considered as an actual competitive alternative.

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Competing interests

The authors declare that they have no competing interests.

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An Adaptation of the Synectics Model for Effective Physician Counseling

Jessica J. Monk[1]✉, Adarsh K. Gupta[2] and Lucia Weiss[3]

[1]*Rowan University School of Osteopathic Medicine, Stratford, NJ, United States; 42 East Laurel Road, Stratford, NJ 08084, monkj5@rowan.edu*

[2]*Center for Medical Weight Loss & Metabolic Control, Rowan University, Stratford, NJ, United States; 42 East Laurel Road, Suite 2100, Stratford, NJ 08084, guptaad@rowan.edu*

[3]*Rowan Medicine, Stratford, NJ, United States; 42 East Laurel Road, Suite 2100, Stratford, NJ 08084, weisslb@rowan.edu*

*Corresponding author's e-mail: monkj5@rowan.edu

ABSTRACT: Introduction: Physician counseling can influence healthy behavior change in patients, but the rate of physician counseling for physical activity is inconsistent. Most studies focus on the patient-reported or physician-reported presence of counseling and physician attitudes that may act as barriers to counseling. Far less research has been directed at understanding the content of physician counseling and aiming to improve upon that content. Methods: A group of patients seeking medical treatment for weight loss participated in a group ideation with the task of constructing realistic and novel approaches to achieving 45 minutes of daily activity. Patients' approaches to achieving the recommended level of activity were recorded prior to the session and following the session in addition to other parameters. The ideation session was designed to reflect the Synectics model and guided by a trained facilitator. The study was both performed and the data analyzed in 2014. Results: The session yielded 52 patient-driven approaches to managing their physical activity. For example, popular strategies included photo and video diary progress tracking and incorporating physical activity into already planned tasks. Conclusions: The researchers conclude that use of the Synectics method may improve the quality and diversity of strategies used to achieve daily physical activity. Future research may explore the utility of these strategies as a supplement or adjunct to physician counseling in chronic disease management.

Key words: Synectics, Activity, Patient-Centered, Counseling

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INTRODUCTION

Physical activity is a known modifiable risk factor for heart disease, diabetes, hypertension, stroke, obesity and certain types of cancer [1]. The Physical Activity Guidelines for Americans published in 2008 outlines the national guidelines for physical activity in adults based on a strong body of research supporting the health benefits of regular exercise. For substantial health benefits, adults should achieve at least 150 minutes a week of moderate intensity exercise. For extensive health benefits, adults should achieve 300 minutes a week of moderate intensity exercise [2]. Most Americans do not get the amount of physical activity that they need [3]. Fortunately, eighty-two percent of Americans have had contact with a health care professional in the last 12 months [4]. This provides a unique opportunity for primary care providers to provide counseling that can substantially impact public health. Despite this, the rate of exercise counseling by physicians is generally low [1]. Most research on this matter relies on physician-reported and patient-reported evidence of counseling and these studies tend to be inconsistent in their results [1]. One study used trained medical students to directly observe physician counseling practices and determined that physicians counsel patients on dietary habits and exercise 20-25% of the time [1].

The majority of research on physician counseling explores the frequency of counseling [1, 5-8], and the adoption of physical activity behavior changes as a result of counseling [9]. It is well known that a major deficit exists in the number of physicians taking advantage of the opportunity to counsel their patients, but research is needed to explore the quality of counseling where it does exist. Improvements in the quality of counseling may lead to better adoption of behavior changes in patients and subsequently increased frequency of physician counseling in primary care. One study used physical activity behavior change and aerobic capacity to measure the effectiveness of counseling interventions. The interventions employed in this study were developed by a coordination team consisting of individuals with healthcare backgrounds. The study included interventions under three categories: informational approach, behavioral skills management and environmental and policy approaches [9]. The development of intervention strategies by patients themselves is a unique opportunity that

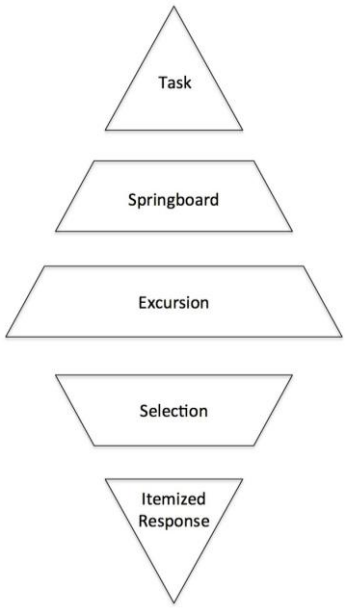
has yet to be fully explored. The Synectics concept provides a model to extract patient-driven activity strategies that are both unique and effective.

The Synectics model is a structured approach to brainstorming that constructs an environment for creative thinking and problem-solving. The model uses group idea construction in an organized system that aims to get participants to think broadly. It is often employed to tackle persistent challenges facing a group or organization. The Synectics model has been used to generate innovative solutions in a variety of industries, and has had much success in international business efforts. The Synectics Education Initiative, a registered charity, aims to use Synectics-based skills in the education system [10]. Much of the preparation of a Synectics session involves creating a collaborative environment and bringing together diverse groups of people who each have a stake in finding solutions. The goal of this research was to determine if the Synectics model could be effective in generating strategies for weight-management, specifically strategies for achieving the recommended daily levels of physical activity.

MATERIAL AND METHODS

The Synectics diamond model (Figure 1) is shaped to represent the notion that powerful ideation begins with a discrete task, followed by broad thinking, and then closing with a concrete, vetted solution.

Figure 1. Synectics Diamond Model



The specific task for this session was to construct realistic and yet novel tools and/or approaches to help patients achieve 45 minutes of activity every day. One of the investigators, a trained facilitator of the Synectics model, guided the session but did not participate in the ideation. The first stage of the model is the idea generation process, known as "springboarding". This stage seeks to have participants think creatively and without constraints. As one idea is generated and stated aloud by the participant the facilitator records it, and others use this idea as a platform, or springboard, to develop more ideas. An "excursion" can be used if necessary to broaden the list of ideas. An excursion is a creative exercise used during the session that allows participants to make connections to seemingly unrelated topics. For this session an excursion was not employed, but it is built into the model to use if needed. As ideas are generated during the springboarding process the facilitator groups the ideas into categories. After the allotted time for this idea generation, a group of ideas are selected by allowing each patient to place three votes on the list of ideas. The criteria for selecting an idea are that it is both thought-provoking and capable of being developed into a concrete solution. This stage is known as the selection phase. For this session, five ideas were selected to be developed further. At this point in the process the shape of the diamond model begins to narrow. This represents the process of building thought-provoking ideas into achievable solutions. The final step involves creating an itemized response, which encourages patients to outline the benefits and the concerns with each selected idea. This helps the group to elicit which ideas are more realistic to achieve.

The principal investigators received approval from the Institutional Review Board (IRB) of Rowan University for the study design. The design included the development and execution of a Synectics adapted session comprised of 6 patients. Informed consent was received from all patients included as study participants. Inclusion criteria consisted of several factors. Patients were recruited from those currently seeking treatment in the Rowan University Center for Weight Loss and Metabolic Control. This includes patients who are currently considered obese or who have struggled with obesity in the past, are of diverse socioeconomic backgrounds, are within the ages 18-89 years, and who maintain a positive outlook towards their health. The session occurred over 3 hours in the evening and included a brief orientation to the process. Much of the preparation for a session involves creating an environment for effective problem solving. Defining the inclusion criteria is an important part of ensuring open collaboration. Before beginning the session and immediately following the session, patients were asked to complete a survey developed by the researchers. The pre-session survey asked patients to describe their current approaches to maintaining daily activity, whether these approaches are effective and what, if any alternatives do they know exist. The post session survey similarly asked what new approaches exist for maintaining daily activity, and for the study participants' predictions of the effectiveness of these new

approaches. In addition, it asked patients to rate their experience with the model using a hedonic scale. Finally, investigators gathered data for classification purposes such as age, gender, ethnicity, education level, height and weight.

RESULTS AND DISCUSSION

Raw data was collected, capturing each patient's response and how those responses were grouped into categories. There were a total of 52 ideas generated in response to the task, and the categories developed from these ideas are provided in Table 1.

After the allotted time for springboarding, patients were asked to place three votes for the ideas that meet the selection criteria. The top five ideas as determined by the patients are provided with their respective categories.

The pre-session survey asked patients to list all current approaches to achieving 45 minutes of daily activity, and the effectiveness of those approaches. After the session, patients were asked to list any new approaches that they had learned, and how effective they predict those approaches would be. Patients included four to five approaches/tools and scored these from one to five, one representing an approach that would definitely not increase their physical activity, and five representing an approach that would definitely help them increase physical activity levels and ultimately achieve their weight loss goals. Responses are provided for each participant and the four to five scores were averaged for each patient (Figure 2). Figure 2 shows that patient-predicted effectiveness of the new approaches and/or tools varied in relation to the scores of their current strategies for achieving physical activity. Two patients predicted these new approaches would be more effective; three patients predicted they would be less effective, and one patient predicted the new approaches would be the same as what they are using currently.

Table 1. Idea Categories

Get More Active	Food	Replacing everyday activities with a more active version	Progress Tracking
Community Involvement	Mind/Body Connection	Reward Systems	Get Organized

Table 2. Top Five Ideas as Selected by Patients

Idea	Category
Mobile technology that visually captures goals	Progress Tracking
Wearable, audible or detectable reminders to stay active	Progress Tracking
The use of a food journal	Progress Tracking
Willingness to change the approach if lacking noticeable results	Mind/Body Connection
Keeping a schedule to document small intervals of exercise	Get Organized

Patients were also asked to rank their personal satisfaction with the session (Figure 3), the effectiveness of the session (Figure 4), and their level of personal motivation after having attended the session (Figure 5). All session participants ranked their experience with the Synectics model as very satisfying, either very effective or somewhat effective, and either very motivating or somewhat motivating. Based on the raw patient responses during the springboarding session, a word cloud was created that depicts words and terms that appear frequently in patient responses (Figure 6).

Patients generally felt the use of a Synectics model as a tool for idea generation was effective, however they did not always believe that new ideas generated would be any more effective than the ones they are already trying. Because this finding is based on a patient-recorded prediction and not on measureable patient behavior changes, additional research is needed to confirm if the strategies developed by patients would in time prove useful in increasing physical activity in a manageable and sustainable way.

The ideas generated during this case study were grouped by the patients into categories, and then the top ideas were voted by the patients based on the selection criteria. Three of the top five ideas came from the same category entitled, "Progress Tracking". This type of categorization can be useful in predicting trends in patient-centered strategies to lifestyle modification. In this session, the task was to generate ideas for achieving daily physical activity. However, it is clear that the role of food in patients' lives is an inextricable part of the

conversation, as this word was frequently used during the ideation. The use of the word cloud can be utilized in future research to better elucidate trends in patient ideation.

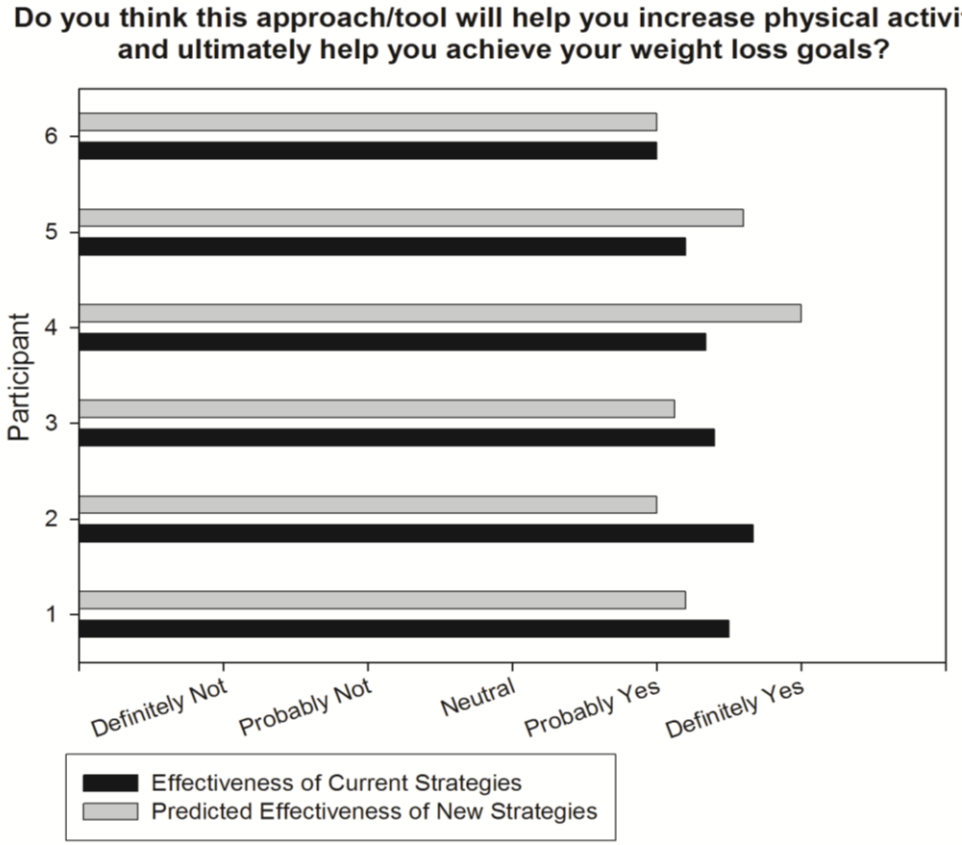


Figure 2. Before and after session responses to activity strategies

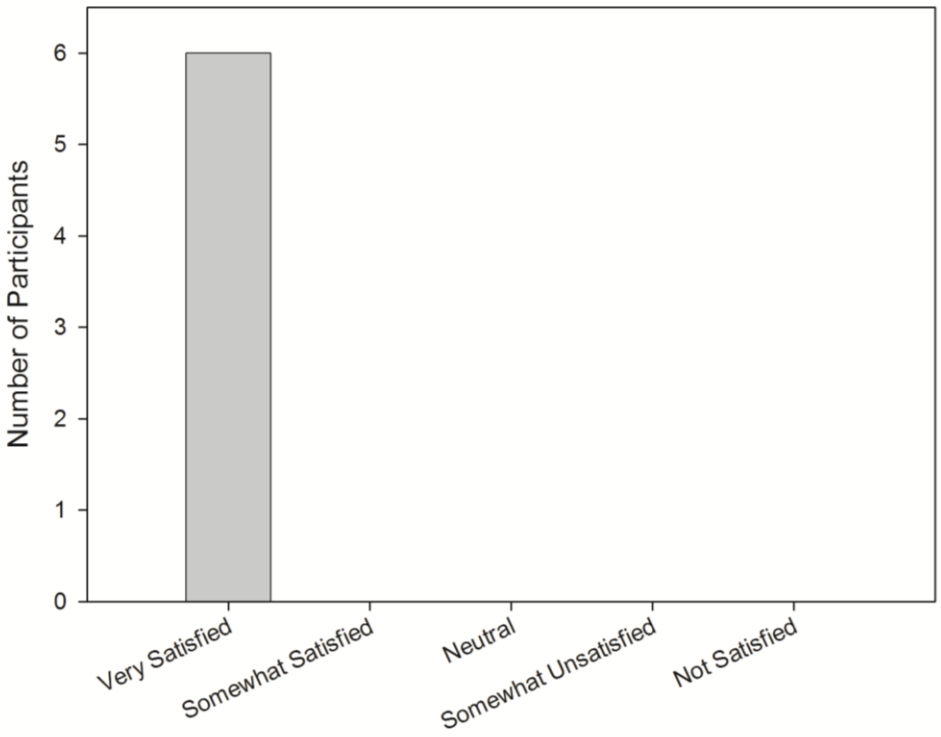


Figure 3. Personal satisfaction

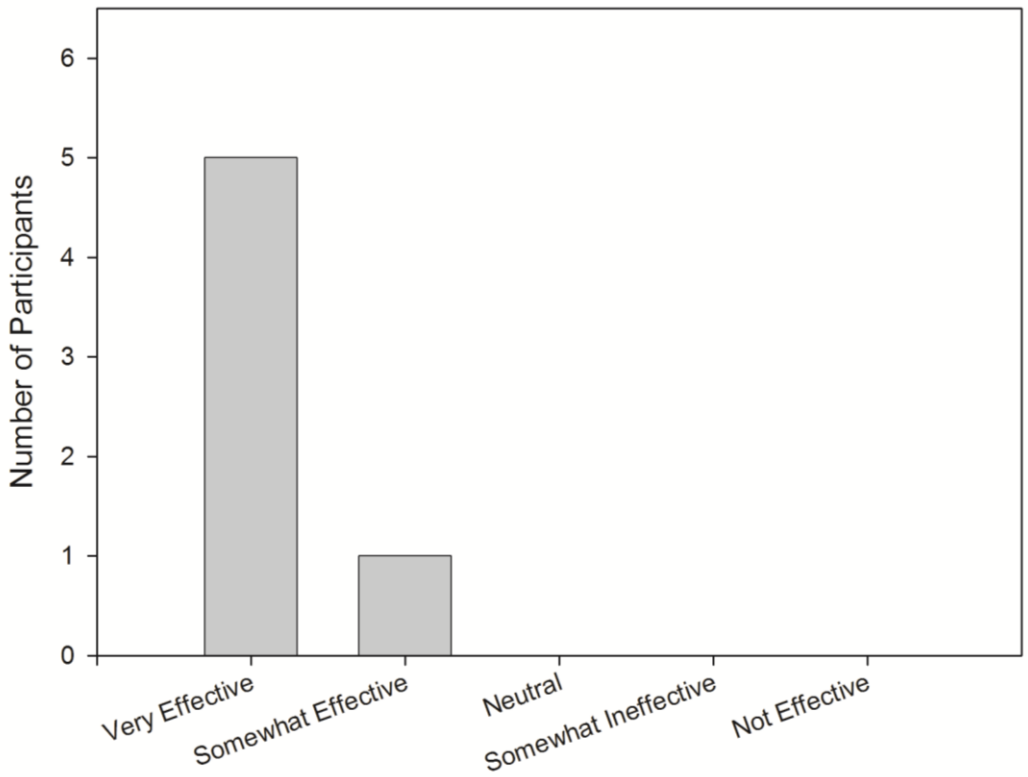


Figure 4. Effectiveness

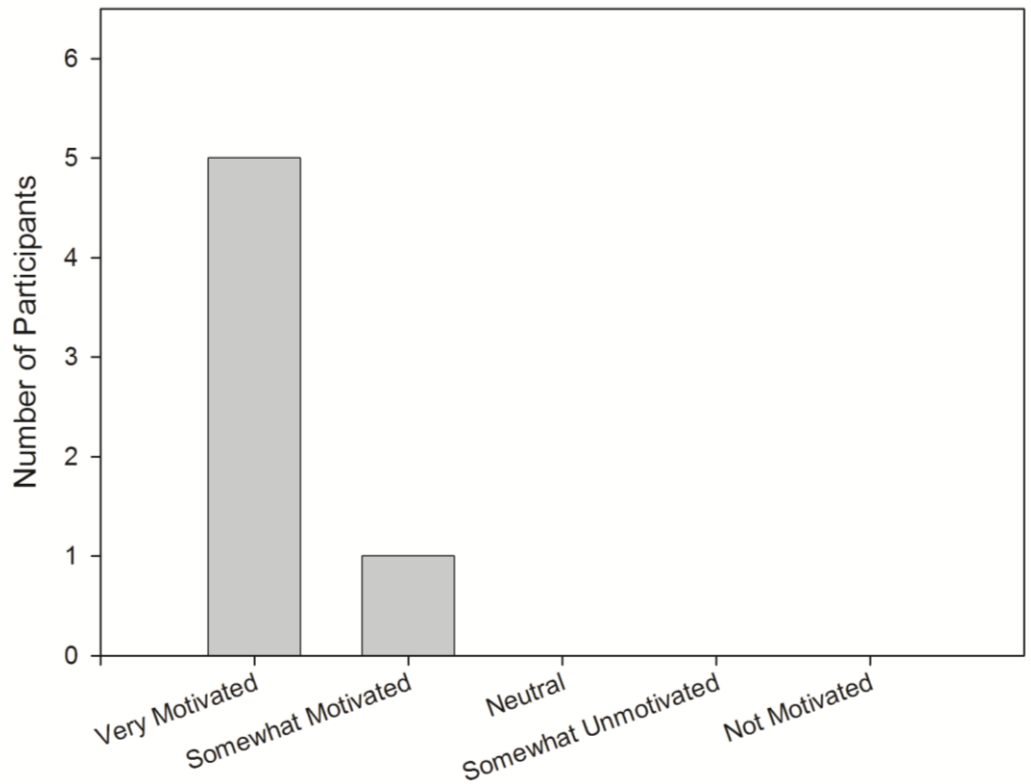


Figure 5. Motivation

Figure 6. Word Cloud Depicting Patient Responses

Prior research discusses the use of Synectics in education, business, marketing and invention [10]. However, in the medical community there is a need to utilize a type of intervention that can harness the patient perspective on chronic disease management. This study demonstrates it's utility specific to achieving physical activity. Future next steps include additional sessions, which will serve to generate larger data sets to support this initial pilot. Once larger data sets are acquired the researchers can evaluate trends in patient-centered strategies and measure the impact those strategies may have on behavior change over time and successful adoption of the recommended levels of daily activity. This model can be widely used to explore patients' management strategies of other chronic health conditions.

CONCLUSION

The disparity in physician counseling is multifactorial and challenging to measure. The potential benefits of improved counseling in primary care are significant, and it is imperative that research continues to seek answers. Developing strategies for patients is often a task prescribed to physicians, researchers and those in the public health sector. Using patients themselves to develop strategies is a unique opportunity. In addition, harnessing the power of a model like Synectics may be useful in extracting creativity and open collaboration from those who have a vested interest in achieving results. Those patient-centered strategies can then be transplanted to the hands of physicians who can exponentially magnify the usefulness of those strategies by integrating them as a part of their counseling in a primary care setting.

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Competing Interests

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Morality and Ethics: A Brief Review

Mina Khatibi and Farhad Khormaei

[1]*Ph.D. Student, Department of Educational Psychology, School of Education and Psychology, Shiraz University, Shiraz, Iran*
[2]*Associate Professor of Psychology, School of Education and Psychology, Shiraz University, Shiraz, Iran*
*Corresponding author's email: mi.khatibi@gmail.com

ABSTRACT: Morality, originated from the Latin word moralitas (which means manner, character, and proper behavior), is the differentiation of intentions, decisions, and actions between those that are distinguished as proper and those that are improper. Morality is the moral beliefs, views, and attitudes of given individuals, societies, and groups. Ethics is systematic reflections on moral views and standards (values and norms) and how one should assess actions, institutions, and character traits. Ethics (also known as moral philosophy) is the branch of philosophy which addresses questions of morality. The word "ethics" is "commonly used interchangeably with 'morality,' and sometimes it is used more narrowly to mean the moral principles of a particular tradition, group, or individual. This review is a comprehensive introduction to the theories of ethics. These are egoism, Kantianism, hedonism, utilitarianism, naturalism and virtue theory, contractualism, existentialism, and religion. Throughout the review, the exposition draws on examples from great moral philosophers such as Aristotle, Kant, and Mill. Many of the greatest figures in Western philosophy from Plato to Wittgenstein have wondered what the good life for a human being consists in, what makes it good and whether it is being so has any cosmic significance. A critical view of the subject is presented at the end of this review.
Keywords: Morality, Ethics, Manner

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INTRODUCTION

Morality and Ethics

Morality, originated from the Latin word moralitas (which means manner, character, and proper behavior), is the differentiation of intentions, decisions, and actions between those that are distinguished as proper and those that are improper [1]. Morality is the moral beliefs, views, and attitudes of given individuals, societies, and groups. Ethics is systematic reflections on moral views and standards (values and norms) and how one should assess actions, institutions, and character traits [2].

Ethics has four branches: 1. Descriptive ethics: It is the factual investigation of moral standards. It describes moral praxis (moral opinions, attitudes, and actions). 2. Normative ethics: It deals with the systematic investigation of moral standards (norms and values) with the purpose of clarifying how they are to be understood, justified, interpreted, and applied on moral issues. What actions and decisions are right or wrong from an ethical point of view? What makes an action or a decision morally right or wrong or good or bad? How should we organize basic social institutions (political, legal economic), and how should such institutions distribute benefits and burdens (rights, duties, opportunities and resources) among affected parties? 3. Meta-ethics: It is the study of ethical terms, statements, and judgments. It is concerned with the analysis of the language, concepts, and methods of reasoning in ethics. It addresses the meaning of ethical terms such as right, duty, obligation, justification, morality, and responsibility. Moral epistemology (how is moral knowledge possible?) investigates whether morality is subjective or objective, relative or nonrelative, and whether it has a rational or an emotional basis. 4. Applied ethics: Applied ethics is a part of normative ethics that focuses on particular fields. "The philosophical examination, from a moral standpoint, of particular issues in private and public life that are matters of moral judgment." Bioethics, animal ethics, environmental ethics, intergenerational ethics, climate ethics, business ethics, and computer ethics [2].

Ethical Theories

What is an ethical theory? The aim of ethical theories is, among other things, to present and defend systematic answers to the two following questions:

1. What moral standards (norms and values) should we take into account when assessing actions, decisions, and institutions?

2. How should such moral standards be justified?

The role of moral theory: Moral philosophy is primarily a matter of thinking about the attractions of various ethical theories. Moral theorizing is the result of a perfectly natural process of thinking [2].

Ethical theories: Two types of ethical theories:

(i) Teleological theories:

(a) Consequentialism (and utilitarianism).

(ii) Deontological theories:

(a) Kantian deontology (monistic and absolutistic).

(b) Rossian deontology (pluralistic and pro tanto).

Morality can be a body of standards or principles derived from a code of conduct from a particular philosophy, religion, or culture, or it can derive from a standard that a person believes should be universal [3]. Moral philosophy includes moral ontology, or the origin of morals, as well as moral epistemology, or knowledge about morals. Different systems of expressing morality have been proposed, including deontological ethical systems which adhere to a set of established rules, and normative ethical systems which consider the merits of actions themselves. An example of normative ethical philosophy is the Golden Rule, which states that: "One should treat others as one would like others to treat oneself [4].

Immanuel Kant [5] introduced the categorical imperative: "Act only according to that maxim whereby you can, at the same time, will that it should become a universal law". Ethics (also known as moral philosophy) is the branch of philosophy which addresses questions of morality. The word ethics is commonly used interchangeably with 'morality,' and sometimes it is used more narrowly to mean the moral principles of a particular tradition, group, or individual [6]. Likewise, certain types of ethical theories, especially deontological ethics, sometimes distinguish between ethics and morals: Although the morality of people and their ethics amounts to the same thing, there is a usage that restricts morality to systems such as that of Immanuel Kant [5], based on notions such as duty, obligation, and principles of conduct, reserving ethics for the more Aristotelian approach to practical reasoning, based on the notion of a virtue, and generally avoiding the separation of 'moral' considerations from other practical considerations [7].

In modern moral psychology, morality is considered to change through personal development. A number of psychologists have produced theories on the development of morals, usually going through stages of different morals. Lawrence Kohlberg [8, 9], Jean Piaget [10], and Elliot Turiel [11, 12] have cognitive-developmental approaches to moral development; to these theorists' morality forms in a series of constructive stages or domains. Social psychologists such as Martin Hoffman [13] and Jonathan Haidt [14] emphasize social and emotional development based on biology, such as empathy. Moral identity theorists, such as William Damon [15, 16] and Mordechai Nisan [17], see moral commitment as arising from the development of a self-identity that is defined by moral purposes; this moral self-identity leads to a sense of responsibility to pursue such purposes. Of historical interest in psychology are the theories of psychoanalysts such as Sigmund Freud, who believe that moral development is the product of aspects of the super-ego as guilt-shame avoidance [18].

Moral self-licensing attempts to explain this phenomenon and proposes that self-image security increases our likelihood to engage in immoral behavior. When our moral self-image is threatened, we can gain confidence from our past moral behavior. The more confident we are, the less we will worry about our future behavior which actually increases the likelihood that we will engage in immoral behaviors [18, 19, 20]. Monin and Miller [19] examined the moral self-licensing effect and found that when participants established credentials as non-prejudiced persons, they were more willing to express politically incorrect opinions despite the fact that the audience was unaware of their credentials.

Theories of Ethics

This review is a comprehensive introduction to the theories of ethics. These are egoism, Kantianism, hedonism, utilitarianism, naturalism and virtue theory, contractualism, existentialism, and religion. Throughout the review, the exposition draws on examples from great moral philosophers such as Aristotle, Kant, and Mill. Many of the greatest figures in Western philosophy from Plato to Wittgenstein have wondered what the good life for a human being consists in, what makes it good and whether it is being so has any cosmic significance [21].

Ethics, Truth, and Reason

The question of the subjectivity or objectivity of morality provides the focus for the earliest complete works

of philosophy – Plato's dialogues. In several of these dialogues, Plato constructs dramatic conversations between his teacher Socrates and various figures well known in ancient Athens. Many of these people were called 'Sophists', a group of thinkers who held that there is a radical difference between the world of facts and the world of values, between physis (nature) and nomos (law or custom) to use the Greek words, the difference being that when it comes to matters of value, the concepts of true and false have no meaningful application. By implication, then, in ethics there is no scope for proof and demonstration as there is in science and mathematics; ethical 'argument' is a matter of rhetoric, which is to say, of persuading people to believe what you believe rather than proving to them that the beliefs you hold are true.

Egoism

What is the best sort of life to aim for? There is a familiar, almost commonplace answer to this question – to be rich and famous. This is a conception of the best life to have that is echoed in, and reinforced by media coverage of the life of the stars.

- Yet, as an answer to the philosopher's question, the idea that the best life is a rich
- and famous one does not take us very far, not so much because it is an unworthy
- ambition (though it may be) but because it is logically incomplete, and necessarily so.

Hedonism

Egoism, defined as getting what you want, is not an adequate conception of the best sort of life for a human being. Its strength is supposed to be that it locates the motive for the good life. In subjective desire and not in any abstract conception of 'the good'. In other words, we cannot avoid asking what we ought to want, and it is this question that a desire based egoism fails to answer. In order to overcome this and other difficulties we considered a redefinition of egoism in terms of interests – the good life is one in which you successfully promote your own interests. We now need to know what is in our best interests. What are the best things to want? In the history of philosophy an answer to this question is provided by a doctrine closely associated with the egoism. This is hedonism – the belief that the point of living is to enjoy life and that accordingly the best life is the most pleasurable one. So close is the association between egoism and hedonism that it is not always easy to distinguish the two views.

Existentialism

Kierkegaard and the origins of existentialism: Søren Kierkegaard (1813–1855) was a very curious man as well as a prolific writer, but his fame is chiefly as a religious thinker rather than a philosopher in the normal sense.

Kantianism

We have been thinking of the idea of the good life as the life it would be most desirable for a human being to lead. But it is time now to consider an important distinction that may be made between two senses of the expression 'the good life'. In one sense 'the good life' means the most desirable or happiest life. In another it means the worthiest or most virtuous human life.

Virtue and happiness: This is a distinction that plays no significant part in Greek philosophical thinking. It came to real prominence first in eighteenth-century Europe.

Utilitarianism

It was concluded that Kant's conception of the best human life as one lived in accordance with moral duty pursued for its own sake encounters serious difficulties. Three of these are specially important. First, it seems impossible to disregard the successfulness of our actions in deciding how well or badly we are spending our lives. Second, Kant's categorical imperative, by means of which we are supposed to determine what our duty actually is, is purely formal, with the result that contradictory prescriptions can be made to square with it. Third, the divorce between a morally virtuous life and a personally happy and fulfilling life, and the emphasis upon deserving to be happy rather than actually being happy, leaves us with a problem about motivation. In order to understand the importance of utilitarianism properly, something needs to be said about its origins. We can then consider its merits as a way of thinking about good and bad, right and wrong.

Contractualism

How to bridge the gap between what is the case and what ought to be the case. Philosophical egoists think

that in the case of the first person no problem exists; if I want or need something, then I have a reason to try to get it, and so, rationally I ought to. The altruist, by contrast, does seem to have a problem. How could it follow from the fact that you want or need something that I ought to try and get it for you? How can the needs of others provide a compelling reason for me to act?

'On what could the demands of morality be based?' and this question raises just the same issue. Kantians and utilitarians both assemble evidence and argument to show that impartial reason and/or the general good point towards an individual's taking a certain course of action. But what reason is there for that individual to follow their prescription, especially if it implies some measure of self-sacrifice?

Ethics, Religion and the Meaning of Life

A general summary of the argument that has brought us to this point may be useful. One way of approaching some central questions of ethics is to ask:' What is the best sort of life a human being can live?' The first answer considered was that given by the egoist: the best life is one in which you get what you want. There are a variety of objections to this answer, but the most important is this. Egoism supposes that our wants and desires are in some sense 'there' waiting to be satisfied, whereas the truth is that we are often uncertain about what to want. We can intelligibly ask not merely about what we do want out of life, but about what we ought to want. This question, however, egoism cannot answer. It follows that egoism is inadequate as a guide to good living. Though it tells us what to do, given preexistent desires, it cannot help us critically form those desires. The second was hedonism, the view that the good life is the life of pleasure. Hedonism goes one stage further than egoism since it recommends not merely the pursuit of desires in general, but a certain specific desire – the desire for pleasure. Consequently, hedonism cannot be charged with the sort of emptiness that egoism can. Moreover, it appears to enjoy an advantage in arguments about good and bad, because pleasure is a value with natural appeal, and hence a promising value upon which to build a philosophy of the good life. But hedonism is not without its own difficulties.

Morality and Cultures

Peterson and Seligman [22] approached the anthropological view looking across cultures, geo-cultural areas, and across millennia. They concluded that certain virtues have prevailed in all cultures they examined. The major virtues they identified include wisdom / knowledge; courage; humanity; justice; temperance; and transcendence. John Newton, the author of complete conduct principles for the 21st century [23] compared the Eastern and the Western cultures about morality. As stated in his book, "One of the important objectives of this book is to blend harmoniously the fine souls regarding conduct in the Eastern and the Western cultures, to take the result as the source and then to create newer and better conduct principles to suit the human society of the new century". It is hoped that this helps solve lots of problems the human society of the 21st century faces.

The Authority of Morality

The problem faced by either the Kantian or the utilitarian conception of the moral life may be termed a problem about the authority of morality – the claims of morality in the competition between personal desire and social obligation. It is this problem that contractualism in many of its forms is intended to address. Suppose we think of moral rules not as personal ideals but as the rules that people agree to live by. This suggestion is attractive because, by putting agreement at the heart of morality, it bridges the gap between egoism and altruism, a gap that appears to dog many of the most influential ethical theories. Contractualism aims to make promising or contracting the foundation of social obligation, but closer examination shows that the most successful version of this maneuver subsumes morality under politics and thus in effect eliminates it. Hobbes's argument, if it works, uncovers the basis of political authority, but it still leaves us with a problem about the authority of morality.

CONCLUSION AND RECOMMENDATIONS

Review of the two most important moral theories leads to the following conclusions:

First; it is probably impossible to unite all of our moral beliefs into a single coherent theory. Utilitarianism requires us to maximize the total amount of preference satisfaction, even if it means doing an injustice to individuals. RP morality requires us to respect the rights of individuals, even if it means promoting something less than the total amount of preference satisfaction.

Second; given this fundamental divergence between the two theories, it is often best to analyze a complex moral problem from the standpoint of both moral theories. If the two theories converge on the same conclusion,

we can have some assurance about the proper course of action. If the two theories do not converge, a decision must be made as to which conclusion has priority. In general, moral philosophers have adopted the view that RP considerations should take priority over utilitarian considerations, except in those instances where the violation of rights is relatively minor.

Third; in addition to conflicts between the two theories, many problems that arise within a given theory are not adequately treated by the theories as they have been presented. These problems fall into two broad categories which can be called relevance problems and conflict problems.

Competing interests

The authors declare that they have no competing interests.

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Morality and Ethics: A Brief Review

Mina Khatibi and Farhad Khormaei

[1]*Ph.D. Student, Department of Educational Psychology, School of Education and Psychology, Shiraz University, Shiraz, Iran*
[2]*Associate Professor of Psychology, School of Education and Psychology, Shiraz University, Shiraz, Iran*
*Corresponding author's email: mi.khatibi@gmail.com

ABSTRACT: Morality, originated from the Latin word moralitas (which means manner, character, and proper behavior), is the differentiation of intentions, decisions, and actions between those that are distinguished as proper and those that are improper. Morality is the moral beliefs, views, and attitudes of given individuals, societies, and groups. Ethics is systematic reflections on moral views and standards (values and norms) and how one should assess actions, institutions, and character traits. Ethics (also known as moral philosophy) is the branch of philosophy which addresses questions of morality. The word "ethics" is "commonly used interchangeably with 'morality,' and sometimes it is used more narrowly to mean the moral principles of a particular tradition, group, or individual. This review is a comprehensive introduction to the theories of ethics. These are egoism, Kantianism, hedonism, utilitarianism, naturalism and virtue theory, contractualism, existentialism, and religion. Throughout the review, the exposition draws on examples from great moral philosophers such as Aristotle, Kant, and Mill. Many of the greatest figures in Western philosophy from Plato to Wittgenstein have wondered what the good life for a human being consists in, what makes it good and whether it is being so has any cosmic significance. A critical view of the subject is presented at the end of this review.
Keywords: Morality, Ethics, Manner

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INTRODUCTION

Morality and Ethics

Morality, originated from the Latin word moralitas (which means manner, character, and proper behavior), is the differentiation of intentions, decisions, and actions between those that are distinguished as proper and those that are improper [1]. Morality is the moral beliefs, views, and attitudes of given individuals, societies, and groups. Ethics is systematic reflections on moral views and standards (values and norms) and how one should assess actions, institutions, and character traits [2].

Ethics has four branches: 1. Descriptive ethics: It is the factual investigation of moral standards. It describes moral praxis (moral opinions, attitudes, and actions). 2. Normative ethics: It deals with the systematic investigation of moral standards (norms and values) with the purpose of clarifying how they are to be understood, justified, interpreted, and applied on moral issues. What actions and decisions are right or wrong from an ethical point of view? What makes an action or a decision morally right or wrong or good or bad? How should we organize basic social institutions (political, legal economic), and how should such institutions distribute benefits and burdens (rights, duties, opportunities and resources) among affected parties? 3. Meta-ethics: It is the study of ethical terms, statements, and judgments. It is concerned with the analysis of the language, concepts, and methods of reasoning in ethics. It addresses the meaning of ethical terms such as right, duty, obligation, justification, morality, and responsibility. Moral epistemology (how is moral knowledge possible?) investigates whether morality is subjective or objective, relative or nonrelative, and whether it has a rational or an emotional basis. 4. Applied ethics: Applied ethics is a part of normative ethics that focuses on particular fields. "The philosophical examination, from a moral standpoint, of particular issues in private and public life that are matters of moral judgment." Bioethics, animal ethics, environmental ethics, intergenerational ethics, climate ethics, business ethics, and computer ethics [2].

Ethical Theories

What is an ethical theory? The aim of ethical theories is, among other things, to present and defend systematic answers to the two following questions:

1. What moral standards (norms and values) should we take into account when assessing actions, decisions, and institutions?

2. How should such moral standards be justified?

The role of moral theory: Moral philosophy is primarily a matter of thinking about the attractions of various ethical theories. Moral theorizing is the result of a perfectly natural process of thinking [2].

Ethical theories: Two types of ethical theories:

(i) Teleological theories:

(a) Consequentialism (and utilitarianism).

(ii) Deontological theories:

(a) Kantian deontology (monistic and absolutistic).

(b) Rossian deontology (pluralistic and pro tanto).

Morality can be a body of standards or principles derived from a code of conduct from a particular philosophy, religion, or culture, or it can derive from a standard that a person believes should be universal [3]. Moral philosophy includes moral ontology, or the origin of morals, as well as moral epistemology, or knowledge about morals. Different systems of expressing morality have been proposed, including deontological ethical systems which adhere to a set of established rules, and normative ethical systems which consider the merits of actions themselves. An example of normative ethical philosophy is the Golden Rule, which states that: "One should treat others as one would like others to treat oneself [4].

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Kierkegaard and the origins of existentialism: Søren Kierkegaard (1813–1855) was a very curious man as well as a prolific writer, but his fame is chiefly as a religious thinker rather than a philosopher in the normal sense.

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Virtue and happiness: This is a distinction that plays no significant part in Greek philosophical thinking. It came to real prominence first in eighteenth-century Europe.

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It was concluded that Kant's conception of the best human life as one lived in accordance with moral duty pursued for its own sake encounters serious difficulties. Three of these are specially important. First, it seems impossible to disregard the successfulness of our actions in deciding how well or badly we are spending our lives. Second, Kant's categorical imperative, by means of which we are supposed to determine what our duty actually is, is purely formal, with the result that contradictory prescriptions can be made to square with it. Third, the divorce between a morally virtuous life and a personally happy and fulfilling life, and the emphasis upon deserving to be happy rather than actually being happy, leaves us with a problem about motivation. In order to understand the importance of utilitarianism properly, something needs to be said about its origins. We can then consider its merits as a way of thinking about good and bad, right and wrong.

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How to bridge the gap between what is the case and what ought to be the case. Philosophical egoists think

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Ethics, Religion and the Meaning of Life

A general summary of the argument that has brought us to this point may be useful. One way of approaching some central questions of ethics is to ask:' What is the best sort of life a human being can live?' The first answer considered was that given by the egoist: the best life is one in which you get what you want. There are a variety of objections to this answer, but the most important is this. Egoism supposes that our wants and desires are in some sense 'there' waiting to be satisfied, whereas the truth is that we are often uncertain about what to want. We can intelligibly ask not merely about what we do want out of life, but about what we ought to want. This question, however, egoism cannot answer. It follows that egoism is inadequate as a guide to good living. Though it tells us what to do, given preexistent desires, it cannot help us critically form those desires. The second was hedonism, the view that the good life is the life of pleasure. Hedonism goes one stage further than egoism since it recommends not merely the pursuit of desires in general, but a certain specific desire – the desire for pleasure. Consequently, hedonism cannot be charged with the sort of emptiness that egoism can. Moreover, it appears to enjoy an advantage in arguments about good and bad, because pleasure is a value with natural appeal, and hence a promising value upon which to build a philosophy of the good life. But hedonism is not without its own difficulties.

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CONCLUSION AND RECOMMENDATIONS

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Evaluation Energy Efficiency in Biodiesel Production from Canola; A Case Study

Reza Abshar[1] and Móslem Sami[2]

[1]*Independent researcher, Gotvand, Khuzestan, Iran.*
[2]*Department of Biosystem Engineering, Faculty of Agricultural Engineering and Technology, University of Tehran, P.O. Box 4111, Karaj*
Corresponding author's email: m.sami@ut.ac.ir; sami.moslem@gmail.com

ABSTRACT: Today fossil fuels are the main source of energy; however, it is becoming increasingly unlikely that fossil fuel supply will be able to meet growth in demand of energy in nearly future. The production of biofuel from farms products has been promoted as a replacement for fossil fuels. Nevertheless the debate over the energy balance of biodiesel is ongoing. In this paper, we focus on analyses of energy efficiency of rapeseed biofuel production in a case study in Khuzestan province of Iran. Our results showed that, in term of energy, canola is a reliable source of energy as biodiesel. The energy ratio in this process was rather higher than one (1.08) and net energy was obtained as 2582.37 Mj per hectare of canola farming. However this value in not high, by considering byproducts of canola farming it can be suggested as a sources of future energy.

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INTRODUCTION

Fossil fuels are the main energy source that drives the world economy. However, for a number of reasons it is becoming increasingly unlikely that fossil fuel supply will be able to meet this growth in demand. Bioenergy is an important alternative source of energy. Energy is derived from plants and biomass can be converted into liquid fuel [1] and directly used in the existing transportation infrastructure, which is almost entirely run on fossil fuels (cars, buses, airplanes).

It is claimed that Bioenergy produced from cultivation of plants could potentially provide a sustainable alternative to fossil fuels for transport. Recent policy-driven interests in renewable energy and carbon mitigation have contributed new resources and enthusiasm for production of bioenergy, in particular the strategy of regionally produced biofuels that can help meet a low carbon fuel standard.

However, recent studies suggest that some combinations of cultivation processes and conversion technologies for bio- energy consume more energy than is produced. The production of bioenergy will have environmental impacts, including those associated with cultivation and the technologies used to process the crops into biofuel. The net benefits of biofuel production from energy, environmental, GHG, and economic perspectives is still debated. Some analyses report a negative energy balance in bioenergy production [e.g., 2]; others have reported net positive energy balances [3, 4, 5]. Most studies acknowledged that biodiesel energy balance for first-time vegetable oils depends mainly on the crop production system [6, 7].

This study evaluated energy balance of bio-fuel production to estimate the sustainability of a number of combinations of production methods and conversion technologies for producing transport energy from canola. Energy efficiency is one of the most important elements of sustainability analysis [7]. Canola refers to a cultivar of either Rapeseed *(Brassica napus* L.) or Field Mustard (*Brassica campestris* L. or *Brassica Rapa var*.). Its seeds are used to produce edible oil suitable for consumption by humans and livestock. The oil is also suitable for use as biodiesel. Canola production in Iran is 164000 tons in 2009 that 64.90% of irrigated farming and 35.10% of dry farming have been obtained.Also in this year, canola cultivation was about 86000 ha that 59.56% is irrigated farming and the rest of that was dry farming [8].

MATERIALS AND METHODS

Data used in this study were obtained from 10 large mechanized canola farms by using a face to- face questionnaire method in Gotvand County during production period of 2015-2016. The farms produce

approximately more than 50 percent of canola produced in the county. Gotvand county is located in the Khuzestan province of Iran with an area 282 Km^2 within 43 º34′ and 49 º21′ North latitude and 32º04′ and 32º27 East longitude). The study region represents semiarid and subtropical climatic conditions with very hot summers and fairly cool winters. The energetic efficiency of the agricultural system was evaluated by the energy ratio between output and input.

By carefully evaluating the ratios, it is possible to determine trends in the energy efficiency of agricultural production, and to explain these trends by attributing each change to various occurrences within the industry [9]. Chemical fertilizers (nitrogen, phosphate, potassium and sulphur), biocides (herbicides, fungicides and insecticides), diesel fuel, electricity, farmyard manure, irrigation water, human labor and machine power were the energy inputs while the outputs were the canola oilseed. For calculating the energy equivalents of inputs and output the energy conversion factors shown in Table 1 were used. The energy cost of inputs and practices were adapted from different sources of estimations that best fit Iran conditions. Based on the energy equivalents of the inputs and outputs, output-input energy ratio, energy productivity, specific energy and net energy gain were calculated.

Table 1. Energy coefficients of inputs

Input/output	**Unit**	**Energy equivalents** (Mj/unit)	**References**
Canola Seed	kg	25	11
N fertilizes	kg	78.1	10
P fertiliser	kg	17.4	10
K fertiliser	kg	13.7	10
Sulfur	kg	8.8	10
Micro fertilisers	Kg or lit	8.8	10
Diesel fuel	lit	46.3	10
Insecticides	Kg or lit	229	12
Herbicides	Kg or lit	430	12
Machinery	Kg h	142.7	13
Human labor	h	2.2	10
Water (transmission)	m^3	0.63	14
Canola oil Seed	lit	27.87	15
Electricity	Kw h	12	16
Natural Gas	m^3	4.20	10
Methanol	lit	30.1	17
Biodiesel (energy content)	lit	34.5	5

RESULTS AND DISCUSSION

Inputs, used in the canola production in the farms and their energy equivalents, together with the energy equivalent of the yield were illustrated in Table 2. The results revealed that, total energy consumption during the production period of canola was 21062.27 MJ/ ha, from which fertilisers had the most share with 15.75%. The second highest energy consumer in canola farming was diesel fuel that consumed 8.43 % of total input energy followed by water energy, which consumes 7.30 % of total input energy. Other inputs have a relatively small share of input energy.

Calculated energy indexes for canola farming are presented in Table 3. The average canola yield obtained was found to be 2418.84 kg/ ha. Accordingly, the total energy output from canola farming was calculated as 60471.02 MJ /ha, in the enterprises that were analyzed. The total average energy requirement for producing of this yield was 21062.27 MJ/ha, which was smaller than the total output energy (60471.02 MJ/ha). Therefore energy ratio for canola farming (2.87) was higher than one and energy balance (39408.75MJ/ha) was positive, indicating that canola production in surveyed region was efficient in terms of energy. The average energy intensity of the studied farms was 8.71 Mj/ kg. This index shows that 8.71 Mj energy was used for production of one kilogram of canola seed. Energy productivity of farms was obtained as 0.15 kg/MJ. This means that 0.15 kg of canola seed was obtained per unit of input energy.

Table 2. Input and outputs of farms and their related indexes in terms of energy

Parameter	Unit	Quantity (Unit/ ha)	Total energy equivalent (MJ /ha)	Percentage from total input
Seed	kg	9.73	243.22	0.40
Fertilisers	--	--	9527.14	15.75
N fertilizes	kg	100.04	7813.13	12.92
P fertiliser	kg	61.97	1078.30	1.78
K fertiliser	kg	35.33	483.96	0.80
Sulfur	kg	15.14	133.23	0.22
micro fertilisers	Kg or lit	2.11	18.53	0.03
Diesel fuel	lit	110.11	5098.03	8.43
Pesticides	--	--	258.69	0.43
Insecticides	Kg or lit	0.22	49.24	0.08
Herbicides	Kg or lit	0.49	209.45	0.35
Machinery	Kg h	10.40	1484.58	2.46
Human labor	h	18.46	40.61	0.07
Water (transmission)	m3	7000.00	4410.00	7.29
Total in farm energy	--	--	21062.27	100.00
Canola yield	--	2418.84	60471.02	--

Table 3. In farm energy indexes

Indexes	Unit	Quantity
Energy ratio		2.87
Net energy	Mj/ha	39408.75
Energy productivity	Kg/Mj	0.11
energy intensity	Mj/kg	8.71

Table 4 shows the total inputs and their energy equivalents in industrial process of biodiesel production (conversion of canola to biodiesel). Biodiesel is produced from oil. The energy for extraction, refining and Rapeseed Methyl Ester (biodiesel) production is dependent on the many factors. Canola seed is traditionally crushed and solvent extracted in order to separate the oil from the meal. The process usually includes seed cleaning, seed pre-conditioning and flaking, seed cooking, pressing the flake to mechanically remove a portion of the oil, solvent extraction of the press-cake to remove the remainder of the oil, and desolventizing and toasting of the meal. Molecule of oils is reduced by trans esterification, resulting in a liquid fuel similar to petroleum diesel, but with some differences. Oil is reacted with methanol in the presence of a catalyst to produce esters or biodiesel. The methanol is charged in excess to assist in quick conversion and recovered for reuse. The catalyst is usually sodium or potassium hydroxide, which has already been mixed with the methanol. Energy ratio for biodiesel production (1.08) was higher than one and energy balance (2582.37 MJ/ha) was positive, indicating that biodiesel production from canola oil in surveyed region was efficient in terms of energy. Energy productivity index showed that 0.05 liter of biodiesel was obtained per unit of input energy. The positive efficiency of biodiesel production from canola was also reported in many past studies. Firrisa et al. [19] evaluated energy efficiency in different farming systems in European an resulted that production of energy from biodiesel is beneficial. Baquero et al. [20] and Smith et al. [21] also reported that biodiesel is a reliable energy sources in term of energy.

According to Table 5, 1130.55 liter of canola oil seed is obtained per hectare that present an energy of 39003.81 Mj/ha. In the process of oil extraction 1422.28 Mjand 2418.84Mj energy for electricity and heating per hectare of canola farms were consumed respectively. This means that 3.40 Mj energy consumed for production of one liter of oil seed in the extraction process. Typically, 100 kg of oil is reacted with 10 kg of methanol plus the catalyst to produce 100 kg of biodiesel and 10 kg of glycerine. In other world 100 liter of canola oil produces 104.54 liter of methyl ester [12]. In the process of transesterification 11.61 Mj per liter of output biodiesel was consumed. According to our results in the studied area 1032.96 liter (988.10 kg) biodiesel per hectare was obtained. Energy intensity index in biodiesel production shows that 32.00 Mj energy was used for production of one liter of biodiesel. Therefore according to this study, energy coefficient of biodiesel is estimated as 66.5 Mj/lit (32.0+34.5).

Table 4. Input and outputs of industrial process of biodiesel

Parameters	**Quantity** (Unit/ha)	**Total energy equivalent** (MJ/ha)	**Total energy equivalent** (MJ/lite oil seed output)	**Total energy equivalent** (MJ/lite output biodiesel)
Oil extraction				
Electricity	--	1422.28	1.26	1.38
Natural gas	--	2418.84	2.14	2.34
Oil extraction energy	--	3841.12	3.69	3.72
Output oil seed	1130.55	31508.29	--	--
Biodiesel production				
Methanol	--	3402.94	--	3.29
Natural gas	--	4748.29	--	4.60
Biodiesel production energy	--	8151.23	--	7.89
Total industrial energy	--	11992.35	--	11.61
Total energy	--	33054.62	--	32.00
Total output biodiesel	1032.96	35636.98	--	--

Table 5. Industrial energy indexes

Indexes	**Unit**	**Quantity**
Energy ratio		1.08
Net energy	Mj/ha	2582.37
Energy productivity	Kg/Mj	0.03
Energy intensity	Mj/kg	32.00

CONCLUSION

This study analyzed the energy balances in the biodiesel production from canola. Our results showed that Canola biodiesel produces 1.08 unit of energy per unit of energy spent during processing for biodiesel production. Net energy per unit of hectare canola farms was obtained as 2582.37 Mj. By increasing the energy productivity in many processes of biodiesel production spatially farming practices and also by increasing the output farm yields, this energy balances can largely increase in benefit of output energies. Therefore this study suggests the canola as a source of biodiesel from energy aspect. However more studies need to perform on the other environmental impacts of biodiesel production especially in farm effects.

Competing interests

The authors they have no competing interests.

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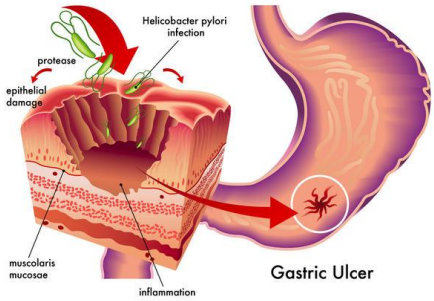

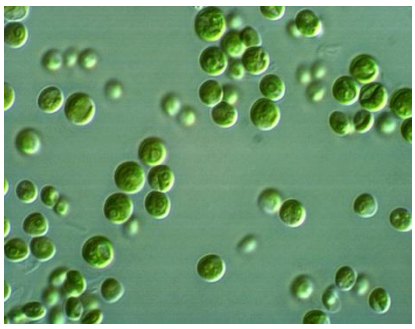

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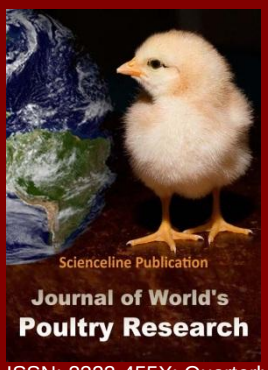

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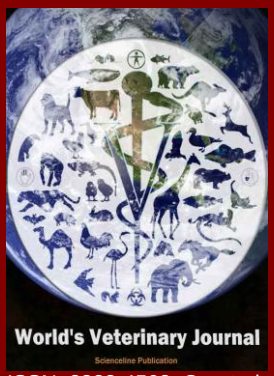

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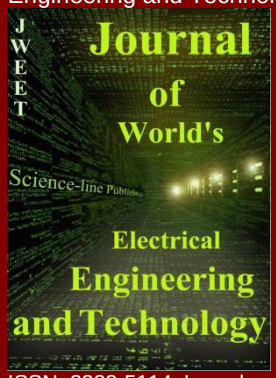

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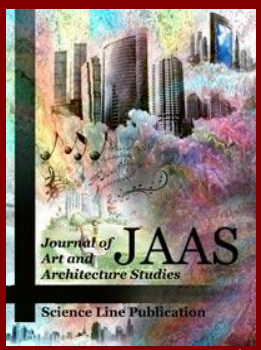

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