

# THE MAQASID-GUIDED MEDICAL DECISION MAKING THE CASE OF COVID-19 PANDEMIC

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## Abstract

This work aims to investigate contribution of Maqasid theory, as a mechanism, to optimize the process of medical decision making, with especial emphasis on COVID-19 case. It is a serious attempt to understand Maqasid theory in the context of the general theory of decision making. The article presupposes that Maqasid al-Shariah, i.e., the terminal goals of Islamic law, can play an important role in optimizing the medical decision, at both medical research and clinical practice. To examine this central presupposition the article analyzes, in four basic parts, fundamentals of the general theory of decision making, tools and techniques of optimal decision, the framework of Maqasid-based medical decision and its application. Decision making, in this context, is defined as “*the optimum rational choice between alternative courses of action*”. The paper has concluded that although the Maqasid theory was designed for legal decision, nevertheless its principles are applicable to all modes of decision making, such as administrative, educational, medical and clinical decision which is closely related to the five terminal goals of Islamic legal decision. Maqasid theory contributes in the process of optimal medical decision through promotion of its two components which are source of knowledge and method of judgment. Through analyzing modes of human needs and hierarchies of interest (*Maslaha*), Maqasid theory provides the ethico-legal framework for optimum medical decision.

Key words: *Decision theory, maqasid, tools and techniques, optimization, human needs, al-Shatibi.*

## 1. Introduction

Over the course of last few decades, the investigation on decision making theory has afforded constructive findings, profound insights and practical descriptions on this topic. The discussion on the matter has posted fundamental questions about the rational bases, principles, standards, models and techniques for optimal choice that influence the decision making in various fields, ranging from public administration, law and economic, to medicine.

The medical decision is a distinctive mode of the general theory of decision making which aims to establish the fundamental principles of optimum decision making. In the course of the real life and in scientific inquiry, human talent is frequently challenged and provoked by practical problems with different scales of complexity and constraints, whereby the need for optimum decision arises, using the mental capacity, assisted by advanced technologies and sophisticated methods to find the optimal solution. This process of *optimization*, i.e., searching for suitable choice or the best solution to the problem, encompasses the various fields of human life, especially management, scientific research, economy, and healthcare matters. The optimization process aims to minimize the cost, the hardship, the harm, the risk, or to uncover the unknown. It also, simultaneously, aiming at maximizing the value, the product, the benefit, the profit, the safety, or to attain the certainty in searching the truth. Decision making is a matter of optimum choice between the alternative courses of action, in various fields of human life. Importance of optimization emanates from the necessity of the true knowledge and ability of prediction for the proper management.

The need for optimization or searching for reasonable standards<sup>1</sup> to manage the natural and social phenomena is, in fact, the central goal of scientific research<sup>2</sup>. F. W. Taylor holds that the fundamental principles of scientific management<sup>3</sup> are applicable to all kinds of human activities, from our simplest individual acts to the work of our great corporations<sup>4</sup>. Of course, discovery of such objective principles is the major challenge to the scientific management, especially discovery of patterns and the systematic orders which govern the purposive acts and the motivative behaviours of mankind, i.e., social and human activities. Taylor, also, emphasizes that the scientific method is only the ideal approach to make decisions.

Accordingly, the central question that arises in this context is what are the rational bases and standards, i.e., the key determinants, of decision making in any specific situation?<sup>6</sup> This is the basic question that the general theory of decision-making aims to investigate. The other related questions are about the effective techniques for the optimal decision making, especially in complex situations such as the COVID-19 case and clinical and medical decisions.

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<sup>1</sup> Reasonable standards are the objective means of measurement and optimization, either rational or empirical. <sup>2</sup> The study and understanding the natural and human phenomena is, also, the central goal of the Divine revelation. Emphasizing on this fact, the holy Qur'an provides key concepts and terms, such as "*everything has been created in specific measures*" (8،دعرا لا) and "*patterns of God are unalterable*" (43،رطاقلا)

<sup>3</sup> The fundamental principles of scientific management are summarized by dealing with things in a reasonable way and with measurable standards. Accordingly, application of this principle on any human activity (act) would make it optimal, rather than random, including decision making.

<sup>4</sup> Besides the scientific standards, Maqasid theory manages human acts (activities) based on ethical norms and legal rules of Shariah which categories all human acts into five scales: (i) obligatory acts (*wajib*), (ii) recommended acts (*mandub*), (iii) optional acts (*mubah*), (iv) acts that recommended to be avoided (*makruh*), and (v) acts that obligatory to be avoided (*haram*). These categories are based on modes of human interest (*maslaha*), i.e., benefits and harms, either personal or public, which are divided into three types: necessities, needs and supplementary. The standard for management (the optimal act) here is internal and personal.

<sup>5</sup> Taylor, Frederick W. (1911). *The Principles of Scientific Management*. (Harper & Brothers, New York). <sup>6</sup> The key determinant of medical decision may include the nature of disease (individual, epidemic / pandemic), the available facilities / services, the criticalness or the risk situation, and economic factors.

It is the main purpose of this article to investigate these fundamental questions. It highlights the underpinnings of general theory of decision making and its contribution to understand the medical decision. The article outlines the systematic approach to the medical decision making with brief explanation of the techniques and modes of knowledge that are essential for optimal decision in complex medical situations, such as clinical practice and decision on disease outbreaks, e.g., COVID-19 pandemic. Finally, the article investigates its key question, which is how *Maqasid* theory can contribute in all this? The important role that can be played by Maqasid theory on the matter of optimal decision will presented and outlined.

## 2. Fundamentals of the decision theory

Application of the scientific principles, such as the judgment based on knowledge, is necessary for effective management and to avoid random interpretation of any act or process. Accordingly, the investigation for standards or reasonable causes behind human acts and activities, including decision making, is necessary. Decision making, in simple terms, is a matter of making choice from a set of available alternatives, either on reflex<sup>7</sup> or with reflection. According to W. Fox and Ivan H. Meyer, decisions in real life situations are often made on reflex, without much conscious thoughts<sup>8</sup>. However, the optimal decision, according to the theory of scientific management, must be based on objective standards derived from thoughtful judgments. Thus, searching for fundamental principles and standards for optimal choice constitutes the core subject matter and objective of the general theory of decision making<sup>9</sup>. Formation of such standards provides the reasonable bases for optimal decision in all human activities, either organizational, economics or medical.

Fundamentals of the general theory of decision making, i.e., the bases and standards for choice, and techniques for optimal decision making, were investigated and discussed by the contemporary decision theorists, with focus on organizational and administrative decision. In this context, Herbert A. Simon (1948), defines decision making as “*the optimum rational choice between alternative courses of action*”<sup>10</sup>. There are various perspectives about what constitutes the ‘*optimum rational*’, but it is no doubt that the optimum decision must be based on some standards of rational judgement, either simple or technical. Decisions made based on simple judgments, or derived from the intuitive sources of knowledge, such as personal experience, are known as ‘*heuristic decision*’<sup>11</sup> or ‘*contingency model of decision making*’. On the other hand, decisions made based on technical analysis or derived from empirical evidence and objective sources of knowledge are known as ‘*optimal decision / choice / solution*’. Optimization is a complex process that may need technical analysis, such as mathematical modeling<sup>12</sup> and intelligent decision support systems.

The general theory of decision making is mainly concerned with analysing the process of optimization, through clarification of the concepts, establishing the reliable bases for decision making, modes of judgment, the distinction between normative and descriptive decisions,

<sup>7</sup>**Reflex** is an action that is performed without conscious thought as a response to a stimulus.

<sup>8</sup> That means they decide based on the alternative that apparently satisfies, without systematic investigation and exhaustively collecting all possible alternatives.

<sup>9</sup> Aiming to provide the fundamental principles, the general theory of decision making investigates bases, reasoning standards, and tries to answer the actual and ought to be questions on decision making.

<sup>10</sup> Simon`s approach was more focus on public administration.

<sup>11</sup> Heuristics decision also known as rules of thumb, it can be derived from other methods of analysis, such as graphs and causal loop diagrams.

<sup>12</sup>Decision making from mathematical modeling perspective is viewed as a problem solving or finding a solution to the case, either simple or complex. In fact, mathematical models are mainly theoretical, in the sense that it is hardly applicable on the real word, and highly technical, in the sense that it might be has no solution.

examining, examining the effective techniques for optimal decision, and so on. Decision theorists observe that, since human elements are unavoidably affect most decision problems, the study of psychology is essential to solve such problems<sup>13</sup>. This is especially applicable to the medical decision, which associates biological factors with human behaviours, therefore it is characterized by complexity, pragmatism, and uncertainty.

## 2.1. Modes of decision making

The modes of decision can be divided into various types, based on different factors. For instance, based on its final goals, decisions can be divided into operational and strategic; and based on theory and practice it can be divided into normative and descriptive decisions; and based on the field of application, can be divided into management (organizational or economic) and medical (research, administrative or clinical). One of the most essential classifications of decision making, however, is the division that is based on modes of knowledge, which includes various types: (i) decision based on objective or subjective knowledge, (ii) decision based on certainty (deterministic), probabilistic knowledge, or under uncertainty (chaotic behavior), (iii) decision based on explicit or tacit knowledge, (iv) the evidence-based decision or value-based decision; and (v) decision under quantifiable or unquantifiable (qualitative) knowledge. Each one of these types needs separate investigation, because it has its own implications on decision making.

### 2.1.1. The administrative and medical decisions

One of the important classifications of decision making, in this context, is the division into organizational and medical. The main objective of the organizational decision is administrative, i.e., management to minimize the cost and maximizing the product. The organizational system, in this case, represents a primary unit for analysis to achieve the goal. The objective of medical decision, on the other hand, is both administrative and medical<sup>14</sup>. It aims not only to reduce the economic cost and energy, but also and more importantly to minimize the risk of complication, morbidity or mortality<sup>15</sup>. The medical decision as guided by medical goals, therefore, must be professional and evidence-based.

Models and the general principles of the organizational decision were proposed by the decision theorists, especially by Herbert A. Simon in his eminent work '*Administrative Behavior*' which published in 1947. The central point of the work was that decision making is the heart of administration<sup>16</sup>. Besides formulating the theoretical principles, the distinctive aspect of Simon's approach was the emphasis on the '*scientific*' nature of the decision making. Nevertheless, some authors have noted that many administrators make decisions with only partial information, due to various factors, such as the complex situation, lack of information and time pressure. Decisions, in such cases are mainly random and intuitive made with little mental consciousness (Hoy, W. 2019). Attempting to optimize the process of decision making, Simon emphasizes that "A general theory of administration must include principles that will insure both correct decision making and effective action". He also observes that before a science can develop principles, it must possess concepts<sup>17</sup>.

<sup>13</sup> Taha, Hamdy A. 2017, notes that solutions are mainly rooted in people and not in technology, especially understanding cultural differences. Any solution that does not take human behaviour into account is apt to fail. <sup>14</sup> The medical decision, in the context of the general theory, can be defined as "*the optimum rational choice between alternative courses of action in medical matters*".

<sup>15</sup> The final goal of medical decision is to minimize the risk of sickness and increase the chance for a healthy life.

<sup>16</sup> This means the optimal decision is a key factor to increase the product and to reduce the loss.

<sup>17</sup> Simon, Herbert A. (1947). *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*. (New York, NY: Macmillan.)

The reflective insights of Simon's approach inspired the contemporary administrative thought to search for relevant concepts and principles for optimal decision, and motivated discussion on the general theory of decision making. Various models of organizational, administrative and institutional decision have been discussed, developed and practiced.

### **2.1.2. The basic characteristics of medical decision**

The medical decision, as a distinctive mode of the general decision theory is governed by the similar principles which aim to minimize the cost or the harm and maximizing the benefit, with focus on medical matters. However, medical decision is characterized by complexity and uncertainty due to its various sources of information<sup>18</sup>. Although the general decision theory, as proposed by administration theorists such as Simon and others, focuses on organizational behavior, nevertheless its principles are relevant to the medical field in both aspects: medicine as a professional organization characterized by specific systems, and medicine as clinical practice<sup>19</sup>. These two dimensions of medical decision need further discussion, clarification and development in the context of the general theory of decision making.

Analysis of medical decision, according to the patient centered and evidence-based medicine, is valuable not only to the medical professionals, i.e., physicians, clinicians and other healthcare providers, but also to the individual patients and health policy makers. Thus, medical decision making now cannot be restricted in the traditional topics, such as riskless and risky choices, but also extended to the influence of social<sup>20</sup>, emotional, and cultural factors (Derek J. Koehler and Nigel Harvey, eds, 2004). This holistic approach has influenced the process of medical decision making and turned it to a complex process, especially clinical practices and decision making during the spread of contagious diseases<sup>21</sup>. The analytical study of medical decision in the framework of general theory would enable, not only to establish the bases and principles, but also to discuss the epistemological problems of medical decision, such as the problem of uncertainty, reliability of knowledge and sources of information.

## **2.2. Tools and techniques for optimum decision**

Decision problems involving complex situations, multiple choices or independent variables arise frequently in science and in practice. Tools and techniques used to solve such problems depend largely on complexity of the situation. This includes mode of system behaviour or the dynamic processes/operations, which can be divided into three basic types/scales: deterministic, probabilistic, or chaotic<sup>22</sup>. Processes of the physical, biological, and social

<sup>18</sup>Medical decision depends on various sources of knowledge, some of which are subjective. Beside the objective biological factors (physiological knowledge), the patient centred medical decision also incorporates other sources of information, such as personal preferences and social and cultural values of the patient. This nature of medical decision needs further investigation and discussion, both at its theoretical principles and practical settings, i.e., clinical decision.

<sup>19</sup> These two dimensions of medical decision post different challenges, due to the philosophical gap between the theoretical ideas and clinical practices.

<sup>20</sup> Social supports, according to literature, can be classified into five interaction systems which are important for an individual's well-being, which are emotional integration, social integration, opportunity for nurturance, Karen Neuman. *Systems Theory*.

ated) by transmission of the virus (pathogen) through contact, direct or indirect with the infected person, such as influenza, measles, and COVID-19 pandemic.

<sup>22</sup> For instance, the analytic hierarchy process (AHP) is a prominent tool for dealing with decisions under certainty (deterministic), whereby the intuitive judgments are quantified in a logical manner and then used as a basis for reaching a decision / solution. AHP is designed for situations in which ideas, feelings, and emotions affecting the

phenomena may roughly represent the three types<sup>23</sup>. Searching for relevant tools and effective techniques<sup>24</sup> to understand and manage the various types of system behavior (optimization) is necessary for both the scientific advancement and practical purposes.

Methods of optimum decision are various, according to the complexity of the situation or the system process, starting from simple analysis, such as graphing<sup>25</sup>, charts, histograms<sup>26</sup>, and causal loop diagrams, up to the mathematical modeling<sup>27</sup> and computer assisted intelligent. Modelling or mathematical programming is one of the most effective methods for optimum decision / solution in complex situations, i.e., to understand, predict, or to manage the case. Means of optimization can be divided mainly into tools (programs) and techniques (applications). Although they are indispensably related, tools are such as formal logic, probability theory, operations research (OR), and dynamic system programming<sup>28</sup>; while techniques are methods of application to solve the problem or to make an optimum solution. Both types, i.e., tools and techniques, constitute the basic subject matter of quantitative research and statistics. The advanced techniques are often characterized by high abstraction, especially mathematical programming, such as linear and non-linear modeling<sup>29</sup>. In fact, some mathematical models are too complex to be solved by any means of optimization algorithms. In such case, it might be necessary to search only for a good solution, by using heuristics or rules of thumb<sup>30</sup>. However, the real value of mathematical model is in its possibility for application, i.e., it can be simulated to systems of real world. (Taha, Hamdy A. 2017) Maqasid theory can play an important role in process of optimization through all aspects of general theory of decision, especially the medical decision.

decision process are quantified to provide a numeric scale for prioritizing the alternative choices or the dominating variables. Study more on these types (Taha, Hamdy A. 2017)

<sup>23</sup> Since social systems / interactions are unavoidably involve a great number of independent variables and constraints, it is more complex and hardly predictable.

<sup>24</sup> In this context, it might be useful to differentiate between tools and techniques. Tools are programming models to make an optimum decision, such as Operations Research (OR), probability theory, and game theory; while techniques are applications of the tools, either highly technical such as mathematical modelling, or simple, such as logical analysis, graphing, charts and diagrams.

<sup>25</sup>**Graph**: is a diagram which shows the relationship between two variables, as measured along each other in right angles

<sup>26</sup>**Histogram**: is a diagram consisting of rectangles whose area is proportional to the frequency of a variable. <sup>27</sup> For instance, several compartmental models for infectious diseases, such as SIR Model (Susceptible-Infected-Recovered) have been developed for optimum decision making on predicting and control the outbreak. <sup>28</sup> A dynamic programming model describes a process in terms of states, decisions, transitions and returns. The process begins in some initial state where a decision is made. The decision causes a transition to a new state. Based on the starting state, ending state and decision a return is realized. The process continues through a sequence of states until finally a final (end) state is reached.

<sup>29</sup> **'Linear'** and **'Non-linear'** are mathematical terms used in statistics to describe two modes of operations and modeling as well. For instance, the operation, i.e., dynamic system process or programming, is **Linear** if the relationship between cause and effect is consistent and predictable. Also, the same in relationship between inputs and outputs, or between dependent and independent variables. It is **'Non-linear'** if the relationship in all this is inconsistent and unpredictable. This is based on complexity of the systems' behavior or operation or quantity of the variables or involvement of constraints. Physical processes are usually linear, while biological processes and social interaction are generally non-linear, thus it hardly measurable and predictable (i.e., difficult to optimize). Various models, such as Quadratic Stochastic Operators (QSO) are developed to optimize non-linear systems. <sup>30</sup> A rule of thumb is the method or procedure that is based on experience and common-sense reasoning; or it is the general principle that is regarded roughly correct but not intended to be scientifically accurate.

### 3. The Maqasid-based medical decision

What is ‘*Maqasid*’, how it is different from ‘*Shari`ah*’<sup>31</sup>, and how it can be applied in the field of medical decision making? These are the key questions that may arise in this section. Maqasid theory, that is the terminal goals of Islamic law, was proposed by the early Muslim scholars to provide the philosophical bases for legal decision (*al-hukum al-shariae*). The theoretical principle of Maqasid, however, were formulated by Abu Ishaq al-Shatibi (d.790H / 1388C) in his prominent work “*al-Muwafaqat fi Usul al-Shari`ah*).

The term ‘*maqasid*’ is plural of the Arabic word ‘*maqsad*’ which literally means the objective, goal, purpose, or the motive of an act or intention behind doing something. It is an internal factor which unknown to others rather than the actor, thus it hardly predictable. For instance, your purpose of studying Maqasid is unknown to others, except by you! Also, the wisdom (*hikmah*) of God (Allah SWT) in legislating laws and imposing it on human community is unknown to others, except by Him. However, through study of the Revelation (Qur`an & Sunah) Muslim scholars has concluded that the objective (*hikmah*) of God in legislating laws is to protect human interest (*maslaha*). Therefore, the Muslim jurists divide the objective (*maqsad*) into two basic types: (i) the objective of God, e.g., obligating certain duties or forbidding certain acts; and (ii) the objective of man behind his acts, i.e., his motive or purpose of doing something, either valid or invalid. They also concluded that the objective of man must be ethically consistent with the objective of God to be valid or considerable. This is due to the fact that objectives of man are naturally motivated by his personal and selfish interests (*maslaha*), while the objective of God is to protect the human interest in an abstract sense, either public or personal. Investigation of these two types of objectives and their relationship constitutes the basic subject matter of the Maqasid theory.

#### 3.1. The core idea of Maqasid al-Shari`ah,

Maqasid theory, in this context, is a mechanism which assists to deduce / infer the decision (*al-hukum al-sharie*), either legal, administrative or medical. The word ‘*al-Shari`ah*’ is a key term in Islamic juridical tradition used for both the legislation ‘*tasharie*’ and its application, that is deriving the legal rule ‘*al-hukum al-sharie*’ (the decision) from its original sources (Qur`an & Sunnah). The legislation, i.e., the authority of making law - allow or disallow, is strictly attributed to God (Allah SWT), Who assigns the law through His revelation. Due to the fact that not all legal decisions are directly understandable / deducible from the revealed texts, man (*al-mujtahid*) needs to use his mental capacity to deduce the suitable decisions from the revealed texts or from principles of these original sources. The process of inferring such decisions, i.e., method of judgment to arrive at legal rules, is known as ‘*Fiqh*’. The principles which guide the judgment process (*Fiqh*) are known as ‘*Usul al-Fiq*’.

The core idea of Maqasid theory is based on the philosophy that the final goal of the Legislator, i.e., the law maker who is Almighty Allah (SWT), is to protect and preserve human interest (*maslaha*)<sup>32</sup>; thus, observing that goal is necessary in the process of inferring the legal

<sup>31</sup> The term ‘*shari`ah*’ in Islamic tradition is used in different contexts, but it technically means to legislate or to make law (allow or disallow), the attribute which given only to Almighty Allah. Maqasid is the objective of Allah behind legislating certain law, which should be observed in the process of making the legal decision (*al-hukum al-shariae*). In this sense, Maqasid is the mechanism, while Shari`ah is the decision itself, thus, there is no clash between the two.

<sup>32</sup> The two problematic questions that arise in this context are: (i) why God needs to impose law on human community, and (ii) what is the purpose (wisdom) behind every specific law, such as forbidding (disallowing) alcohol? Philosophy of law is generally based on these two problems, besides the problem of authority who legislates the law. In order to answer these questions, Muslim scholars (jurists, theologians and philosophers)

decision. Now, the Maqasid theory needs to investigate two basic problems: (i) firstly, how we understand the aim of the Legislator (Almighty Allah), and (ii) secondly, what are the different modes of human interest (maslaha) which need to be protected and preserved? The third question that is logically associated with the two problems is the issue of application, that is the process of applying the decision in a specific case. Shari`ah, here is the decision (hukum), whereas Maqasid theory is the mechanism or the guideline to derive the optimum decision, either legal, administrative or medical. It is true that Allah (SWT) disclose His ethico-legal decisions (rules) through commands, direct or indirect injunctions, known as (*Amr* and *Nahie*), but majority of the cases are without clear decision, therefore Maqasid theory can be used as a mechanism and guideline to arrive at correct decision which may satisfy the potential objective of the Legislator.

The attempt to answer the first question has formulated the science which concerned with the objectives of the legislation, known in Islamic tradition as '*mabahith al-`illah*' and this was undertaken mainly by Muslim jurists, especially theorists, under the science of '*Usul al-Fiqh*' (Principles of Islamic Law). However, the holistic view of this issue was provided by Maqasid theory. In attempt to answer the second question, Muslim scholars divided the human interest (Maslaha) into three major types, hierarchically based on human needs, as individual and collective, which are: (a) *Daruri* needs (necessities), (b) *Haji* needs, and (c) *Tahsini* needs (supplementary). Although protection and preservation of the three types is the purpose of the Legislator (Almighty Allah), however, the priority goes to the first type, i.e., *Daruri* needs which are defined in five major things, that are essentially needed by every human community, which are: (i) protection of the faith/belief, (ii) protection of human life, (iii) protection of mind, (iv) protection of progeny<sup>33</sup>, and (v) protection of ownership (property). These five forms of human needs have formed the central idea of Maqasid theory. Accordingly, protection and preservation of these essential needs, according to Muslim scholars, is the main objective of legislation in Islamic legal theory. For instance, protection of human life as base for medical decision, protection of mind as base for medical decision, protection of progeny as base for medical decision, and so on. Even protection of property or faith are valid reasons for medical decision from Islamic perspective.

The five essentials of Maqasid theory (necessities), in this context, can be related to the five hierarchies of human needs from a conventional perspective as formulated by Abraham Maslow. Human acts, according to the needs theory, are motivated by five modes of needs which ranked as following: (i) physiological needs<sup>34</sup>; (ii) security needs; (iii) social needs; (iv) esteem needs; and (v) self-actualization needs.

Although the two theories, i.e., Maqasid and needs theory, are aiming to understand the same phenomenon but from different perspectives<sup>35</sup>. Maqasid theory is a philosophical approach in a religious framework, while needs theory is a scientific approach in psychological framework. However, both theories provide reasonable bases for decision making, i.e., it may enable to predict how man should act in certain cases. Therefore, both theories can contribute in the process of optimizing the medical decision.

agree that Almighty Allah is the only Legislator and the final objective of the Legislator is to protect human interest (maslaha).

<sup>33</sup> What meant by 'progeny' here is reproduction, rather than lineage or knowledge of biological descendent.

<sup>34</sup> The basic needs of survival such as food, drinking, and shelter.

<sup>35</sup> Maqasid theory is based on philosophy Islamic legal theory, while needs theory is scientific based. Both theories are aiming to understand human acts and accordingly to manage human activities in optimal ways.

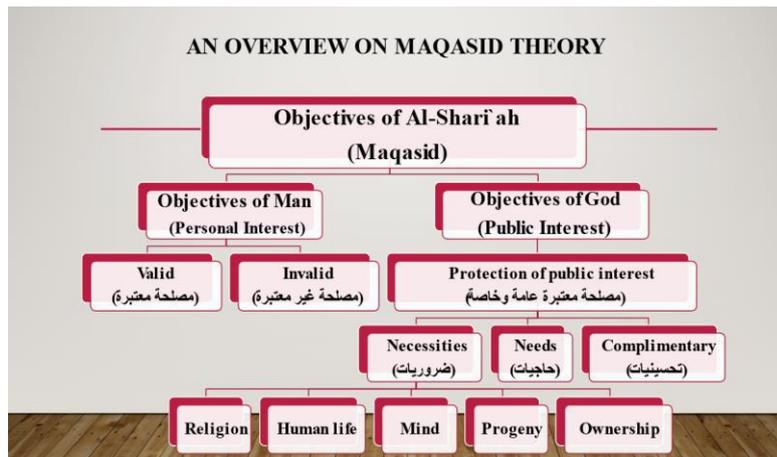


Figure 3.1

### 3.2. Maqasid and the medical decision

The key question, now, is how Maqasid theory which was designed for legal decision making can contribute in medical decision, especially in clinical practices? To investigate this central question scientifically, it is necessary to identify the basic components of medical decision making, which are centered around two elements: (i) sources of knowledge, and (ii) methods of judgement and optimization.

In fact, relating ‘Maqasid’ to medicine is technically important and strategically constructive for optimum decision making. Nevertheless, Maqasid theory addresses the five essential human needs<sup>36</sup>, which are preservation of human life, faith, mind, progeny, and property. Even faith and the property are now closely related to medicine because the patient-centered medicine takes in consideration the personal preferences, choices, values and beliefs in medical decision; while economic ramifications are the major concern of every patient today. So, the optimum medical decision should be based on knowledge that is derived from all these sources.

#### 3.2.1 Maqasid theory and sources of medical knowledge

Although medical decision is mainly evidence-based, however it depends on various sources of knowledge, some of which are objective and measurable and others are intuitive. Beside the objective knowledge, such as precision medicine<sup>37</sup>, which derived from biological factors, the patient centred medical decision also incorporates other sources of information, such as personal preferences, beliefs, and social and cultural values. Accordingly, medical decision is a complex process combines between both the objective and intuitive modes of knowledge. In other words, it is a knowledge-based in one sense and value-based in the other<sup>38</sup>. The complex nature of medical decision provides a valuable chance for Maqasid theory to play an important role with both modes of medical knowledge for an optimum medical decision making.

<sup>36</sup> The major difference between needs theory and Maqasid is that the former only concerned with material needs, while Maqasid theory is more comprehensive.

<sup>37</sup> The precision medicine approach is increasing potting emphasis on biological factors, namely information derived from human genome for medical intervention and treatment, but the optimum medical decision, especially clinical decision, depends not only on biological factors but also consideration of human factors, such as personal preferences, beliefs and values.

<sup>38</sup> Unlike other fields, the medical decision is more complex due to its nature which associates the objective biological elements with subjective elements, such as the environment factors, personal preferences, beliefs, and cultural values. However, the complex nature of medical decision needs further investigation and discussion, both at its theoretical principles and practical settings, i.e., clinical decision

### **3.2.2. Maqasid and the objective medical knowledge**

Based on principles of modern science, which emphasize on objective knowledge, medical decision is theoretically evidence-based, in the sense that the optimum medical decision is made based on measurable information derived from biophysiological processes of human body with no consideration to role of other intangible factors which may influence the case, such as personal beliefs and values. Decisions derived from objective sources of knowledge can be optimized by tools and techniques of optimization as explained above, such as mathematical modelling, especially in complex cases. Maqasid theory can play an important role with objective sources of medical knowledge for optimal decision in two ways: first, by identifying the final goals of decision making, as defined by the five essential needs of humanity (*daruriyat*); and secondly, as mechanism it provides means which support to derive knowledge as well as the effective application methods and techniques for optimum medical decision.

### **3.2.3. Maqasid and the intuitive medical knowledge**

Clinical decisions, based on patient centered medicine, can be made based on judgements derived from intuitive knowledge which is subjective. Intuitive knowledge, in this context, is defined as information derived from immeasurable sources, such as expert of the physician, patient's personal beliefs and values, and other external factors which may influence the case. In fact, Maqasid theory can play a major role in this type for optimal decision. This is due to the fact that the question of values is central in this case.

Besides the objective standards that can be optimized by above techniques, Maqasid theory manages all human acts (activities) based on ethical norms and legal rules (*hukum sharie*) which divides human acts, in a hierarchy order, into five scales: (i) obligatory acts (*wajib*), (ii) recommended acts (*mandub*), (iii) optional acts (*mubah*), (iv) acts that recommended to be avoided (*makruh*), and (v) acts that obligatory to be avoided (*haram*). These categories, which based on human interest (*Maslaha*), i.e., benefits and harms, can provide a useful mechanism for optimization of medical decision, especially the clinical decision. The standard for management (the optimal act) here is internal and personal. This means, both the physician and the patient are guided by their faiths and values to act in specific ethical ways that can be predicted based on the above five prescriptions. For instance, we expect that a true Muslim physician cannot commit haram acts with his/her patients, also a true Muslim patient cannot tell lies or false information to his/her doctor. The act, in both cases, is ethically predictable.

The maqasid theory, in this case helps to identify three applications: (i) what often drives your values, actions, and decision-making processes; (ii) to recognize what can potentially interfere with you to achieve your goals, and (iii) it helps to making choice among the overwhelmingly diverse alternative courses of action. These determinants can be divided into goals and means. Maqasid theory can help performing this task, as well as hierarchy of determinants as identified by needs theory.

## **3.3. Maqasid and the process of medical judgment**

In comparison with administrative decision, some authors have observed that medical doctors, unlike administrators, know what they need to achieve, that is a healthy condition of the patient. They neither engage all their resources on the basis of an initial diagnosis nor wait for every conceivable bit of personal history and scientific data before beginning treatment. They survey the symptoms of a patient, analyze the difficulty, initiate a tentative treatment, and, if it fails, they try something else (Etzioni, 1989). Of course, this might be true only in urgent or simple

cases. The major challenges faced by physicians, however, are the complex cases which associate with uncertainty and multiple sources of medical information. The traditional methods, in such cases, may not be appropriate. The central objective of medical decision in all cases is to develop methods that reduce the uncertainty faced by physicians to reasonable manageable size of information that enables to derive relevant choices and correct answers from vast and complex sources of knowledge. Clinical decisions are choices which convert information into action, through judgment. These acts help to determine how prevention programs are promoted, how diagnoses are made, what tests are ordered, and what treatments are performed (Eddy, David M., 1986).

Judgment is the most important part in the process of medical decision, especially in clinical practice. Seeking to improve medical decision making, Maqasid theory defines judgment as set of evaluative and inferential steps that can be adopted in the processes of optimization, either based on logical reasoning or based on technical methods. It is the rational process that helps achieving the goal of the best choice between the alternative courses of the action, as related to medical matters. As explained above, medical judgment can be made based on both modes of knowledge, i.e., objective and intuitive. In other words, clinical judgment employs different modes of reasoning for both quantifiable and non-quantifiable knowledge. However, Tonelli, Mark R. (1998) observes that the quantifiable reasoning, that is evidence-based knowledge, is explicitly preferred by modern medicine, while other types of reasoning, whether intuitive, experiential, or physiologic are considered inferior. As elucidated above, Maqasid theory can play an important role in both information modes for optimization of clinical decision, which is the core of medical decision.

#### **4. Maqasid-based decision in COVID-19 Pandemic case**

The outbreak of coronavirus disease 2019 (COVID-19) was caused by infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which spread rapidly throughout the world. This outbreak has highlighted certain things, including importance of the advanced technologies for diagnostic tests to understand nature of the virus and its functional behaviours, as well as the effective decisions to control the rapidly spreading disease across the global community. Diagnosis of COVID-19 can be done by direct detection of either SARS-CoV-2 RNA or SARS-CoV-2 antigens, as well as by indirect detection of specific antibodies (Ludolf, Fernanda & colleagues, 2022). The effective decision to manage the implications human behaviours in spreading the disease, however, has been one of the major factors behind prolonging the period of the disease (Chichakly, K., 2021).

##### **4.1. The complex nature of decision on COVID-19**

Decision making during pandemics is a complex process due to the fact that the medical decision generally depends on two major types of information which are the physiobiological factors and behavioural factors. The complex nature of medical decision, in COVID-19 case, was reflected by its two dimensions: (i) the complex structure and chaotic function of the virus, which make it difficult to understand the nature of the virus and patterns of its behaviours, and (ii) complexity of human behaviours which make it hard for the health decision makers to control the rapidly spreading of the disease. Maqasid theory can effectively contribute for optimum decision in the second cases, i.e., understanding and management of human behaviour in spreading the disease; while the advanced technologies and optimization techniques, such as mathematical modelling can contribute to deal with the first dimension, i.e., understanding

the complex nature and function of the virus, which enables to predict and control. Besides, the above two factors, there are other matters which Maqasid theory can contribute more effectively than the conventional approaches of modern science. This includes the problem of health inequality and triage in allocation of scarce resource during the pandemic, ethical issues associated with medical research, ethical issues associate with personal information and tracing apps, and other ethical issues, such as immunity passports and COVID-19 vaccines.

## **4.2. Health inequality**

Health equity is used to describe the policies and acts that ensure every person has an equal chance to achieve the best health condition. However, the distribution of health resources between different population groups with different social backgrounds has always been unequal. The structural injustice allows the privileged communities to have more opportunities to develop their potential and vastly more access to healthcare. This case has deepened by COVID-19 pandemic. There are ample social factors, including employment status, ethnicity, socio-economic position and comorbidities that play a crucial role in determining health resources distribution which leads to health inequities.

The COVID-19 pandemic has posted the ethical issue to the centre of the discussion. During this pandemic, the disadvantaged groups, example the homeless, the unemployed, migrant and refugees, are more vulnerable and exposed to the disease. Millions of such groups might be unable to practice the most basic and effective public health measure, social distancing and hand hygiene as they live in a crowded living arrangement and have limited access to basic necessities, such as water supply. For instance, the COVID-19 clusters have significantly elevated the cases among the migrant workers that living in the overcrowded dormitories. Their lifestyle does not allow them to practice the social distancing or even have a proper access to sanitation (Chew & Hui Min, 2020).

These situations have rapidly increased the level of unemployment and cause thousands of peoples to loss their job and financial security. There are accumulated evidences that shows a strong and consistent relation between job and financial insecurity with various health outcomes including poor self-assessed health status, higher rates of mortality and mental distress (Hensher, 2020). This situation is worsened in countries that do not have universal health coverage and where health insurance is accessible only via employment.

## **4.3. Decision on triage and resource allocation**

The effective decision is needed in the case of triage<sup>39</sup> and allocation of scarce resources. The sudden increasing number of patients have become overwhelming during COVID-19 even for the well-equipped health systems. Critical decisions have to be made in order to decide the allocation of medical resources such as intensive care beds and ventilators. and the allocation of limited healthcare workers, particularly in order to save as many lives as possible and at the same time to avoid health disparity. In this critical situation, health officers need to make an optimum rational ng decision about which patients need to be prioritize and get access to the limited medical resources.

Maqasid theory can effectively contribute is such situation. In order to avoid biased and unethical decisions, guidelines are needed and has to be based on ethical values, in which it

<sup>39</sup> Triage means: 1. the process of determining the priority of patients' treatments by the severity of their condition or likelihood of recovery with and without treatment. 2. the process of quickly examining patients who are taken to a hospital in order to decide which ones are the most seriously ill and must be treated first.

may be in conflict. Two main ethical values, 'utility' and 'equity' need to be taken as the ethical standards and strong foundation to create the guideline. 'Utility' is referring to the idea of trying to maximize the number of lives saved while 'equity' can be described as the idea that every patient should get an equal chance of receiving lifesaving care that they required (Schmidt, 2020). However, it is difficult to balance these two ethical values. In order to maximize the hospital utilities and saved as many lives as possible, decisions made need to prioritize patients with higher chance of recovery and discriminate against patients with comorbidities, old patients or any patients that have lower chance to survive (Robert et al., 2020). It is particularly important for the authority to be transparent in the decision-making process (Xafis et al., 2020).

## **5. Conclusion**

Generally speaking, decision making is closely related to human needs in which the Maqasid theory provides useful mechanisms to identify and determine the hierarchy of needs based on which the optimal decision can be made. Although Maqasid theory was designed and historically developed to deal with optimal decision making in a legal context, nevertheless its principles are applicable to all kinds of decision making, such as demonstrative, educational, and economics decision. Maqasid theory is especially applicable to the medical decision because it incorporates the two major components of medical decision, which are source of information and method of judgment and application. This is besides addressing the five essential human needs. By identifying the final goals, Maqasid theory also can assist the conventional approaches in application of optimum decisions. It is also, provides the ethico-legal framework of medical decision making. This paper may provide a serious attempt to apply Maqasid theory on medical decision, however a farther investigation is needed to develop this approach. This should include an extended study on Maqasid theory as related to the modes and sources of clinical decision. A comparative study on Maqasid theory as related to Needs theory also needs farther investigation.

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