

# Micro Green Farming for Productive Life Management

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**Abstract:** Covid 19 had brought a remarkable makeover to most of the people socially, mentally, economically and emotionally irrespective of age and gender. Therefore it was need of the hour to know the lifestyle of people and their stress level. This study paved way for an opportunity to create awareness and motivate people to take up micro green farming which would eliminate their frustration and stress and also lead a healthy life. Questionnaire survey was carried out which included various sections to understand their lifestyle pattern. The results revealed that life pattern of most of the respondents moved from active phase to a sedentary phase. No significant difference was noted within their lifestyle factors but it was evident that majority of them faced severe stress and frustration. Lack of physical activity, fear, anxiety, relationship and financial problem and over use of gadgets were few causes. With the intervention program particularly micro green farming, the stress level of the selected respondents dropped and were found to be happy and satisfied. Few participants took up micro green farming as a small start-up and micro green kits were distributed to the community to motivate and make them understand the value of the super greens.

**Index Terms:** Adolescents, Elderly, Life management, Micro green Farming, Start- Up, Stress.

## I. INTRODUCTION

Lifestyle is a term generally used by individuals to articulate their behaviour, attitude and standard of life in terms of their inhabitancy, job, social activities, cultural and religious views, economy and diet.

The prevailing pandemic situation due to Covid – 19 (Corona Virus) has brought in major changes in the life of people globally. A remarkable makeover has happened to most of the people socially, mentally, economically and emotionally irrespective of age and gender. There are plenty of research

studies done on lifestyle and its management in recent decades. According to World Health Organization (WHO), 60% of lifestyle related factors are correlated to individual health and quality of life.

Life Management is the way of managing and balancing the lifestyle factors productively to fulfil the goals of one's life which will help, to take right decision and maintain happiness in life. Stress, depression, frustration are mental conditions which are temporary and changes with life events and experiences. They have to be under control to avoid further health problems.

This study was done during the pandemic period when the spread of corona virus was at its peak and lock down was implemented all over the globe. People especially children and elderly were panicked and stressed due to various factors. Therefore it was need of the hour to know the life of people, their stress level, causes of their stress and also impart interventional programs to help them cope with the situation. Benefits of micro greens, ease of growing it at home and its potential to entrepreneurship is very much in limelight nowadays. There are ample studies to prove it as well. Understanding this, the results of the study paved way for an opportunity to create awareness and motivate people to take up micro green farming which would also eliminate their frustration and stress.

The objectives of the study were:

1. To study the lifestyle of people during lock down period.
2. To understand the stress level of the respondents and causative factors.
3. To create awareness and motivate people to take up micro green farming as major intervention program.

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## II. LITERATURE SURVEY

The coronavirus epidemic surfaced from the Wuhan city of China and subsequently spread across the globe (Li Z. et. Al, 2020). Several media reports suggested an increase in mental health issues such as anxiety, depression, posttraumatic stress-like symptoms, insomnia, and anger among the general population, health workers, and people who were kept in isolation due to infection with coronavirus. (Roy D et. Al, 2020). A survey done to study the psychological impact of COVID-19 lockdown reported that about 40.5% of the participants reported anxiety or depressive symptoms and three-fourth (74.1%) of the participants reported a moderate level of stress, and 71.7% reported poor well-being (Grover S et.al, 2020).

A recent online survey from India reported that the COVID-19 pandemic, lockdown, and resultant situations led to the marked disruption of mental health service provisions across the country involving brain stimulation, electroconvulsive therapy, inpatient services, outpatient services, psychotherapy, etc. (Grover et. Al, 2020).

According to the study published on Indian J Psychiatry by Dalal P K and team in 2020, the specific mental health issues during the COVID-19 pandemic were:

- Emotional problems include fear, rage, edginess and mood swings, criticism, and blaming (self and others), frustration, depression, emotional numbness, and inability to cope.
- Biological functioning such as impairment in sleep and sexual functioning.
- Cognitive issues include poor concentration, poor memory, and inability to make decisions, integrity loss, heightened alertness, perceptual distortions, intrusive and unwelcome memories, reduced self-esteem/confidence, and denial.
- Psychological and personality issues include emotional outbursts, anger, argumentativeness, and inability to settle.
- Patients with substance use disorder are likely to experience withdrawal symptoms due to lockdown and inaccessibility to substances. Similarly, spending most of the time at home due to lockdown increases the risk of excessive use of the Internet and binge-watching of television, which may later lead to technology addiction.

Research on the viral outbreak has largely indicated negative outcomes such as depression and anxiety (Wang et al. 2020). It is clear and evident from several research studies that the life management and quality of life of people is affected and disrupted all over the globe today. Life free from fear, anxiety, stress, depression and frustration seemed to be a common wish of majority of the humans. Happiness, satisfaction, value of work, self-regard, recreational and productive activities, opportunities to learn new things, importance of family and friends in life is also well treasured by our human race.

Another study showed that mean sleeping duration changing from 6.85 hours to 8.17hours, average screen time becoming 5.12 hours from 3.5 hours, 51.9% subjects experiencing increased stress levels, 76.4% subjects experiencing increased food intake and 38.6% subjects had decreased levels of physical

activity as per self-monitoring (Roy Shubhajeet et. Al, 2020)

Maria Stephen, Archdiocese of Bhopal in an article had mentioned that stress is something we cannot escape from and we have to accept the lifestyle and our approach to simple things like going to the shop, school, malls, place of worship, travel, etc. will change forever (Stephen, 2020)

An article published in Times of India mentioned that recent lifestyle changes (work from home and lack of in-person interactions) have led to a rise in psychological sufferings. Few practices which were earlier rejected as being slow, monotonous and ineffective like yoga, meditation, kitchen garden, spiritual practices etc. have proven to be particularly useful in allaying anxiety and fight social isolation.

This study attempt to understand the lifestyle pattern of people during the lockdown. Lifestyle pattern in the study meant a detailed understanding about the life factors like dietary and food consumption pattern, time expenditure and activity pattern, problems (social, economic, and psychological), life experiences and stress level of the people. Life management is all about the different techniques in managing these factors to overcome the critical situation and leading a healthier, happier and satisfactory life.

Several studies and articles in the media have shown that growing green in the urban kitchen helped to beat the lockdown blues. Parents are encouraging their children to enroll into online gardening classes as means to keep them engaged, with schools being closed and outdoor activities limited. (Uniyal, 2020)

“Micro greens” is a marketing term used to describe young and tender edible seedlings harvested when the cotyledonary leaves have fully developed and the first true leaves emerge. Micro greens are gaining increasing interest as potential functional foods, due to their relevant contents of micronutrients and bioactive compounds. At the same time, micro greens can be grown in a very simple way, even in very small spaces, being suitable for urban agriculture, as well as a component of space life support systems (Massimiliano Renna et. al, 2020)

Dietary guidelines for 2015-2020 from the U.S. Department of Agriculture and the U.S. Department of Health and Human Services recommend 1-4 cups of vegetables per day for males and 1-3 cups of vegetables per day for females, depending on their age. Because micro greens are rich in nutrients, smaller amounts may provide similar nutritional effects compared to larger quantities of mature vegetables (Uyory Choe et. al, 2018).

The present study is an attempt to motivate people on kitchen gardening focusing on micro green farming as a way to eliminate anxiety, stress and lot of other negative emotions. This would also help in consuming a balanced, healthier and nutrient dense diet with moderate level activity as well.

## III. METHODOLOGY

A cross-sectional study was done during 1st May – 30th July 2020 (period of national lock down) to understand the lifestyle of people during the pandemic situation. An online

questionnaire survey was carried out. A Google form was created and circulated on different online platforms such as Telegram groups, Whatsapp groups and LinkedIn. An online consent form was also approved by the participants to indicate their willingness to participate in the study. The study was done using stratified random sampling method and had 557 samples. Data was obtained from places like Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Tamil Nadu, Telegana, Uttar Pradesh, Utrakhand, West Bengal, Middle East, Ireland. Age group of the respondents ranged from 12 years to 80 years.

The questionnaire was divided into sections like general socio demographic factors, dietary and food consumption pattern, time expenditure and activity pattern, problems (social, economic, and psychological), life experiences and stress level to get a detailed understanding about their life pattern and behavior. The general stress level of the participants were assessed using the Perceived Stress Scale-10 (PSS) which is a widely used instrument to measure overall stress (Cohen et.al, 1983).

An intervention program was also carried out for consecutive three months to help them overcome their stressful life, frustration and boredom. From the above sample, 100 samples who faced severe stress due to various factors were selected for the intervention program. Interested people were introduced to idea of micro green farming.

Awareness sessions, training and workshops were conducted through online mode and respondents were trained to grow micro greens. 75 people made active participation in the program. Information regarding soiling, sowing, watering, germination period, soaking of seeds, requirement of sunlight, harvesting and storage were imparted to the selected respondents. Almost 10 variety of micro greens were selected depending on the ease of availability. Later nutritive value of each micro green were discussed and also a variety of recipe demonstrations using micro green were also demonstrated ranging from garnishing, salads, snacks, main course, drinks/smoothies, side dishes etc.

Statistical analysis were done to know whether any of the lifestyle factors had direct impact on their physical and mental health. Evaluation of the intervention program was also analyzed to know its effectiveness. The data was analyzed with the help of SPSS v 21. t-test, Anova and Correlational analysis were carried out to make inferences.

#### IV. RESULTS AND DISCUSSION

##### *Socio Demographics*

Of the 557 respondents, 43% were males and 50.6% were females and 0.7% belonged to transgender category. Majority (34.1%) of the respondents were in the age group of 20 to 30 years and 24% was under the age group 30 to 40 years.

Table 1: Age and gender wise distribution

Age Group	Male %	Female %	Other %	Total %
<20 Years	5.4	4.1	0.0	9.5
20-30 Years	15.1	18.3	0.7	34.1
30-40 Years	12.9	11.3	0.0	24.2
40- 50 Years	9.0	7.2	0.0	16.2
>50 Years	0.6	9.7	0.0	16.0
Total	43.0	50.6	0.7	100.0

88.3% resided in urban area. 58.7% of the respondents were married comprising of home makers, entrepreneurs, retired persons and those of other professions. 41.3% were single who were students, professionals and pensioners. Regarding size of the family 82% had 2 to 5 members in their home.

##### *Lifestyle Factors*

“Life style” means the way of living of an individual. Home, friends, neighborhood, society, and culture primarily found and way of living decide it. In the present study, certain selected lifestyle factors like food and dietary pattern of people, their activity and time utilization pattern, and also their other problems and stress level were analyzed.

##### *a. Dietary and Food Consumption pattern*

62.7 % of the respondents were non-vegetarians, 26.9% vegetarians and 10.4 % ovo-vegetarians. 62% of them consumed 3 meals per day and 23% had more than 3 meals a day. Water intake was up to 2 liters for 52 % of the people whereas for 42% it was less than 1 liter per day. Nibbling was a common habit among 20 to 40 year age group (63%).

Due to lock down and work at home situation most of the people (58%) had late breakfast or even developed the habit of skipping breakfast or lunch. Almost 58% of the respondents mentioned that they bought outside food or junk foods bi weekly before lock down. 70% of them included greens, vegetables and fruits in their diet daily but it was also seen that 11% did not include greens and vegetables in their diet at all.

52% started to try new recipes at home and developed better eating habits. But 38% opined that they were too much into snacking and nibbling were gaining weight in short span of time. The study also revealed that 81% of the respondents consumed immune boosting foods and homemade herbal medicines as remedies to resist the virus. According to a survey by the International Food Information Council (IFIC), around 60% of American consumers reported cooking at home more and around 20% said they were eating healthier than usual, eating more than usual and also eating more pre-made meals from their pantry or freezer.

Processed food, pickles and bakery snacks were bought by 53% of the population frequently. With all this 93% of the respondents felt happy and satisfied with their food pattern during lock down days.

Similar results were seen in a study done by Ghosh et.al. It stated that carbohydrate consumption and frequency of snacking increased in 21% and 23% participants, respectively.

Exercise duration was reduced in 42% and weight gain occurred in 19% patients. (Ghosh et. al, 2020)

**b. Time Management and Activity Pattern**

The data was exciting to note that for 58% of the respondents lockdown had helped to bring discipline in their life in terms of time management and other daily activities particularly females. They also found time to try new hobbies, join online classes for yoga, Zumba, aerobics and other activities. They contributed generously to household chores and cooking as well. On the other hand a major population of the respondents (80%) particularly students, adolescents and young adults said they messed up their day because of laziness, boredom and over sleep hours. 36% reported that they slept late night by 1.00 AM and got up late by 9.00 AM. Altogether in a day it was evident from the data that they slept for almost 12 hours per day. This definitely may cause physical and mental problem in them.

Another study done in University at Buffalo research also suggested similar results. When the behavior pattern of children during the lockdown were examined throughout March and April in Verona, Italy, it was seen that the children slept an extra half hour per day, spent nearly five hours per day in front of the screen and dramatically increased their consumption of red meat, sugary drinks and junk foods. Their physical activity decreased drastically (Faith, 2020)

**c. Problems**

Information with regard to their physical, social, mental, emotional, financial problems were discussed. The table below depicts the response from the respondents with regard to the positive and negative side effects of lock down with respect to life management.

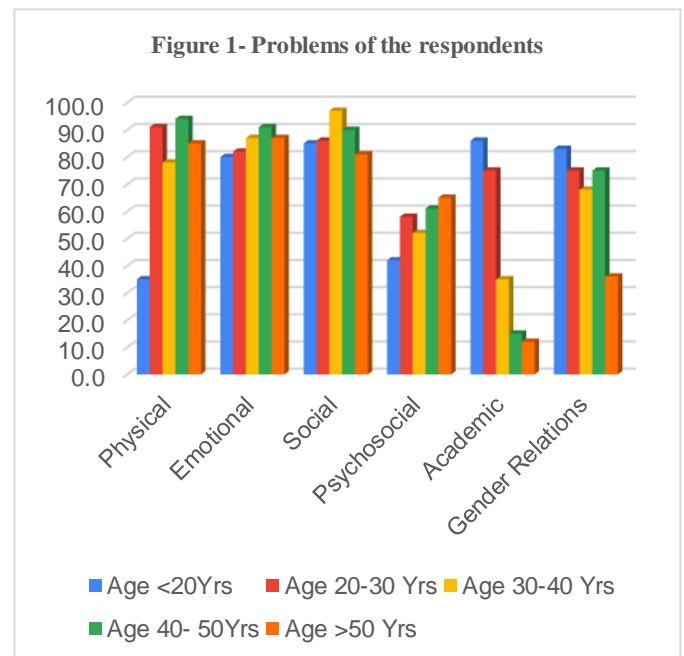
Table 2: The side effects of life behavior during lock down

Positive Side effects	%	Negative Side effects	%
Contact elderly and lonely people	93.4	Boredom	96.2
Decrease in pollution	100.0	Stress & Strain	86.0
More relaxed life	62.3	Hard to spend time	94.3
Transition to a healthy lifestyle	37.0	Too much of house chores	70.0
Better family bonding	50.3	Reduction or no salary	40.4
Able to grow spiritually	47.9	Difficulty in getting things	66.2
		Difficulty in accessing doctors and hospitals	86.2
Increased Creativity	32.3	Relationship problems	46.7
Learned new skills	34.5	Frustration	68.2
Recreate old hobbies	36.4	Laziness	72.2
Others	62.5	New on social media is depressive	90.8
Time for books	49.9	Inability to go outdoors	92.3
Got to know how creepy I am	89.0	Difficulty in social mingling	89.0
Could manage time properly	68.6	Financial problems	56.0
Got to be more	58.2		

disciplined			
Consume more healthier food	89.0	Over use of gadgets	82.4

A study done by Banaras Hindu University stated that during the initial phase of lockdown, the participants had a negative situational perception and a lack of motivation for fitness exercise. They also showed psychological health concerns and overdependence on social media in spending their free time. But gradually they developed positive self-perception and motivation to overcome their dependence on gym and fitness equipment and to continue fitness exercises at home. The regular fitness workout at home during the lockdown greatly helped them to overcome psychological issues and fitness concerns (Kaur, et.al, 2020).

In the present study the problems of the respondents were categorized into physical, emotional, psychosocial, social, financial, gender related and academic and is depicted in figure below.



Financial difficulties, lack of access to essential services and little to no assistance from the government are some of the difficulties that persons with disabilities have been facing during the Covid-19 lockdown, notes a report by the National Centre for Promotion of Employment for Disabled People (NCPEDP) (Krishnan, 2020).

Gopalan and Misra in their study on “COVID-19 pandemic and challenges for socio-economic issues, healthcare and National Health Programs in India” quoted that the pandemic of COVID19 has necessitated the need for attention to the underserved and marginalized populations holistically, to prevent long-lasting adverse health outcomes. Economic stressors on the whole population will need mitigation and quick changes in policies. They also suggested that the National Health Programs for communicable and

NCDs must be re-vitalized and strengthened.

#### d. Stress level

The study showed that 75% of adolescents, 70% of the young adults within the age group 20 to 30 and 86% of the elderly population of 65 to 80 years faced severe stress than any other age groups. The reason for their stress were emotional, mental and social pertaining to the lock down situations. The common causative factors for their stress were found to be lack of physical activity, fear, anxiety, relationship problem, financial problem and over use of gadgets due to work from home option.

On statistical analysis the stress level of the respondents and these causative factors showed significant relation ( $P < 0.05$ ).

Many similar studies have been done to study the stress of people during lock down all over the globe. The results of few studies say that 12.1 % participants felt helpless & depressed suggesting that containment, loss of daily schedule, and diminished social and physical contact with others can cause mental fatigue, dissatisfaction, and a feeling of confinement from the remainder of the world (Brooks et.al, 2020)

Sleep disturbances have been shown to be a risk factor for mental disorders (Xiao et al., 2020)

#### Micro green farming for Stress Management

Though no significant difference was found between their lifestyle factors and stress level, it was evident from the study that 70 to 80% of the respondents mainly adolescents, young adults and elderly people faced high depression and frustration ( $P < 0.05$ ). Few coping techniques as part of stress management were introduced for a week for people who were interested. 100 people (15 adolescents- 15 to 20 years, 62 adults- 25 to 45 years) and 23 elderly 50 to 80 years) who fell under high stress level category were selected. The techniques were simple and were of their interest which included cooking classes, embroidery workshop, yoga, meditation, dance, music and scripture learning etc.

WHO had advised engaging in regular exercising, daily chores, and hobbies during the present COVID-19 pandemic for mental health well-being (WHO, 2020).

After a week of stress management sessions a good relation was built with the respondents to understand their preference level in terms of activities and hobbies. Their stress level dropped a bit though the fear, anxiety and loneliness was still prevailing in them due to the pandemic.

All 100 participants were introduced to micro green farming. Few introductory sessions on micro greens were given to all and among them, 75 participants came forward with much interest and passion towards it.

Table 4: Distribution of participants for micro green farming

Age Group	Male	Female
>20	0	14
20-30	3	9
30-40	1	13
40-50	2	14
50-60	2	5
<60	2	10
<b>Total</b>	<b>75</b>	

Various workshops and training were imparted through online mode and all the progress were constantly monitored. This intervention program went well for a period of three months where the respondents felt happy, satisfied and above all stress free.

The impact of micro green farming on the stress level of the respondents were statistically analyzed the results showed a great dip in their stress level.

Table 5: Impact of Micro green farming on the stress level

Mean	Stress Level	
Initial Score	160.87	123.93
Final Score	110.84	106.71
t-value	<b>33.120**</b>	<b>4.614**</b>
p	0.000	0.000

The study is a confirmation to state that the stress level of the participants were purely due to the pandemic situation. Fear and anxiety, loneliness, restrictions to social activity and stay indoors had affected their mental health also decline in lifestyle quality and health choices. The negative emotions can also be due to sleep and eating disorders and also sedentary life style.

Micro greens farming is one the most profitable and cost effective crop that one can grow. This is definitely an activity which even a school going child can take up. They are low cost, easy to grow, highly nutritious. In this pandemic situation, Indians have become more health conscious than earlier days as health is of priority these days. Many research studies have also shown that most of the people switched to organic foods in order to build immunity to fight the contagious virus.

A study done by a Home Scientist in University of Delhi found out in her study that an improvement in healthy meal consumption pattern and a restriction of unhealthy food items was noted, especially in the younger population (age <30 years) (Chopra et.al, 2020).

It is a well-known fact that all organic food are rich in antioxidants and dense in nutrients which help to boost immunity. Therefore, taking onto consideration the current scenario, is the right time to grow micro green and also initiate to micro green business. In this study also, 12 respondents from

the above sample took this as a small start up to deliver fresh micro greens to nearby hotels, hostels and houses. They also developed micro green kits and distributed to the community to motivate them and making them understand the value of the super greens.

#### CONCLUSION

The study made clear that the pandemic and the effect of lockdown had created havoc among the community in large scale. The causative factors for their stress and frustration were common among many of the respondents irrespective of age and gender. This study also helped to create awareness on micro greens and motivated them to take up micro green farming particularly adolescents and elderly. Therefore the study also pointed the need for an extensive awareness program, intense hands on workshop and training session for a larger population on micro greens – its benefits and potential of micro green farming in an entrepreneurial level. This will not only help people overcome their stress and boredom and but also will help them switch from sedentary lifestyle and lead an energetic, healthy and happy life throughout.

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