

Assessing the Effectiveness of Aroma Therapy on Reduction of Labour Pain during First Stage of Labour in Primigravida Mothers in Selected Hospital of Haldwani, Uttarakhand

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Abstract

Labour pain is an unpleasant sensory and emotional experience that is caused by uterine contraction. The management of labour pain by various non-pharmacological measures such as breathing exercise, aromatherapy, back massage and music therapy is helpful. These techniques provide sensory input to the brain to promote relaxation, enhance positive thoughts and transmission of nociceptive stimuli of pain. However, massage therapy is commonly given during labour to reduce labour pain with essential oil to promote relaxation, reduce anxiety and shorten the perception of labour pain. The present study aimed to reduce the level of labour pain in first stage of labour and response of olive oil back massage as reported by primigravida mothers. Quantitative research approach and quasi-experimental (pre-test and post-test control group design) was used. Purposive sampling technique was used for selection of 60 primigravida mothers in selected hospital of Haldwani (Uttarakhand) fulfilling the inclusion criteria. The effectiveness of the olive back massage was assessed by numeric pain rating scale and structured interviews to assess the response of primigravida mothers regarding olive oil back massage. The study result revealed that out of 60 samples, in experimental group maximum 17 (56.67%) of mothers belonged to the age group of 19-25 years, 8 (26.67%) mothers had secondary education; majority (n=28, 93.33%) were home makers. In control group 17 (56.67%) mothers were in age range 19-25 years, about a fourth of them (n=7, 23.33%) mothers were graduates, 28 (93.33%) mothers were home makers. The mean percentage difference between the pre-test and post-test scores of labour showed that in experimental group 't' value 01-02 was 15.425, 03-04 was 16.155, and 05-06 was 5.572 while 't' values in control group were 8.266, 5.442 and 5.769, respectively. Thus, olive oil back massage was significantly effective in reducing the level of pain in experimental group at 0.05 level of significance. No significant association was found in the level of labour pain when compared to the age and education. Significant statistical association was found between labour pain and the type of family at $p < 0.05$ in the experimental group. To conclude, the olive oil back massage was effective to reduce labour pain in the first stage of labour in primigravida mothers because the level of labour pain was reduced after olive oil back massage in the experimental group.

Key words: Primigravida mothers, Aroma therapy, Labour pain

Primigravida is a woman who is pregnant for the first time. Primigravida mothers during pregnancy have feelings of worry and fear about labour pain. One of the most significant moments in a woman's emotional life is when she gives birth. Major aspects of midwifery care are supporting women during labour pain and providing appropriate care to mother for better outcomes of pregnancy (Choudhary et al, 2021). During the childbirth process, various non-pharmacological measures are performed such as breathing exercise, aroma therapy and music therapy that provide sensory input to the brain to

promote relaxation, enhance positive thoughts and transmission of nociceptive stimuli of pain during labour and cutaneous stimulation measures that include back massage, changing position, heat and cold application etc. (Rawat et al, 2021).

Pregnant mothers typically worry about labour pain and deal with it during childbirth. Various factors affect the experience of a mother regarding labour pain such as the ability to overcome environmental and psychological factors during birth. Whereas the biological, psychological, social, spiritual, cultural, and educational aspects affect the perception of pain during labour. Moreover, pregnant women experience severe back pain during childbirth due to uterine contractions and cervical dilation. While massage is an ancient method of reducing pain during childbirth

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which stimulates the body to release endorphins which work as natural painkiller that stimulates the production of oxytocin and reduces stress hormones and agitation (Chobanian et al, 2003). Therefore, many advanced non-invasive methods are in use to reduce pain during childbirth. Among these methods is the aromatherapy massages using olive oil on the level of pain and anxiety during labour among primigravida women (Rawat et al, 2021).

Olive oil contains palmitic acid, oleic acid, linoleic acid, stannic acid, myristic acid, glycerides and a reserved amount of vitamins E and K. It is extracted from ripe fruits. Olive oil is rich in monounsaturated fats and massage with olive oil is quite effective; it has pain-relieving properties and also works as an anti-inflammatory drug. The massage with olive oil over the sacral region by circular motion helps reduce labour pain during the first stage of labour in primigravida mothers (Mekala, 2011).

Objectives

The study was carried out with the following objectives.

- To assess pre-test score of labour pain in experimental and control group during first stage of labour in primigravida mothers.
- To evaluate the effectiveness of olive oil back massage on labour pain during first stage of labour in primigravida mothers in experimental group.
- To find association between the pre-test score of labour pain in experimental group with selected demographic variables during first stage of labour in primigravida mothers.
- To explore the responses of primigravida mothers regarding olive oil back massage among experimental group.

Need for Study

Pregnant mothers especially primigravida mothers are usually worried about their labour pain and coping with labour pain during childbirth. A mother's experience of labour pain is influenced by many factors including her coping abilities, the birth environmental and psychological factors. Every mother perceives labour pain differently. The biological, psychological, social, spiritual, cultural and educational dimensions of each mother have an impact on their perception of pain during labour (Aziato et al, 2017).

Pregnancy is a unique experience for primipara mothers that can cause anxiety and fear among them. The midwives play major role in various aspects of pregnancy to provide support and ap-

propriate care to the mother during the child-birth process such as promoting relaxation and also skin stimulation measures such as back massage, postural management (Choudhary et al, 2021). Moreover, about 800 women in the world are dying every day during pregnancy and childbirth. Among them 20 percent are Indian women; further, the women refuse for natural childbirth because of fear of discomfort and they prefer Caesarean sections (Choudhary et al, 2021). In their study, Annal et al (2014) revealed that olive oil back massage and back massage were effective in the reduction of the intensity of pain during labour as the p-value was <0.001 in both the control and experimental groups. This study concluded that while comparing the effectiveness of olive oil back massage and back massage, the back massage group elicited statistically significantly lower benefits than the olive oil back massage group.

Pregnant mothers experience severe back pain during labour which is associated with uterine contraction and cervical dilatation during labour. Studies have found that women who experience back pain during the menstrual cycle are more likely to experience back pain during labour (Annal et al, 2014).

Massage, an ancient way to reduce labour pain stimulates the body to release endorphins, which are natural pain-relieving substances that stimulate the production of oxytocin and reduce stress hormones and arousal. Olive oil has pain-relieving properties and acts as an anti-inflammatory agent. It is known to have soothing and calming properties (Annal et al, 2014). Results of a study conducted by Pawale et al (2020) on effectiveness of back massage in pain relief during the first stage of labour in 40 primigravida mothers in Karad (Maharashtra) showed that a significant difference in post-test pain score was noted between the experimental and control groups ($p < 0.0001$). This study concluded that back massage was effective in reducing pain during the first stage of labour in primigravida mothers in comparison to those who were subjected to routine care.

Many studies have revealed that the majority of primigravida mothers were having labour pain during the first stage of labour and they were not aware about the non-pharmacological measures to reduce the labour pain during this time. During clinical posting researchers observed that intranatal mothers were screaming and ideally lying on the bed with unbearable pain during labour process. To understand their feelings and help them reduce the pain of childbirth by giving them non-pharmacological measures it was decided to conduct a study on reducing the level

of labour pain and providing comfort for mothers during the delivery process.

Review of Literature

Rekha (2021) conducted an experimental study to assess the effectiveness of allowing family members to stay with the women during the first stage of labour in reducing the level of pain perception among primigravida mothers. The sample consisted of 40 primigravida mothers (20 each in experimental and control group) by using non-probability convenient sampling technique in a selected hospital of Coimbatore in Tamil Nadu. Data was collected through a numerical pain rating scale for the assessment of labour pain. The results revealed that in the experimental group, the pre-test level of mean pain score was 7.2 (SD 1.5) and the post-test mean score and SD was (1.5±1.2). Whereas, in the control group, the pre-test and post-test level of mean pain score and SD were 7.8±1.02 and 7.55±1.46 respectively. 't' value for the level of labour pain, 0.06 at $p < 0.05$ level significant shows the effectiveness of presence of support person. Most of the mothers in the experimental group had moderate pain. Based on the statistical findings, it is evident that the provision of a support person during labour was an effective intervention among mothers. The study concluded that there was a significant association between pain perceptions among mothers in the experimental group and the support person.

A descriptive study to assess the level of pain perception among primigravida mothers during the first stage of labour was undertaken by Anitha & Sri Devi (2021). The sample consisted of 60 primigravida mothers selected by the non-probability convenience sampling technique in government maternity Hospital, Karaikal (Tamil Nadu). Data was collated through Mc Caffery's numerical pain scale and was used to assess pain perception among primigravida mothers. The results showed that during the pre-test 25 percent ($n=15$) of primigravida mothers had mild pain perception, 55 percent ($n=33$) had moderate pain perception, and 20 percent ($n=12$) of primigravida mothers had severe pain perception. The study concluded that the majority of primigravida mothers had a moderate level of pain perception during the first stage of labour.

Karki (2021) conducted a quasi-experimental study on the effect of back massage on pain perception during the first stage of labour among primi mothers. The purposive sampling technique was used to select 56 primi mothers, 28 each in experimental and control groups in a teaching hospital in Kathmandu, Nepal. Data was collected through the Visual Analogue Scale (VAS) to assess

labour pain. The results revealed that the pain perception after back massage (mean 59.64, SD 11.12) was less than before back massage (mean 68.21, SD 10.22), $t(27) 6.61$ at 0.05 level of significance with $p < 0.001$. There was a significant difference in pain perception before and after back massage in the experimental group ($p < 0.001$). The study concluded that back massage was effective in reducing labour pain.

Results

Frequency wise Distribution of Demographic Variable of Participants in both Groups

Table 1 shows the demographic variables of participants in both experimental group and control group. Regarding age in experimental group, majority ($n=17$, 56.67%) of mothers belonged to age group of 19-25 years followed by 13 (43.33%) mothers in 26-32 age group. Whereas, in control group ($n=17$, 56.67%) mothers were in age group 19-25 years followed by 13 (43.33%) mothers in 26-32 age group. As for educational status, in experimental group, higher ($n=8$, 26.67%) mothers had completed secondary education, minimum 2 (6.66%) mothers completed primary education, and middle education. Whereas, in control group mostly ($n=7$, 23.33%) mothers had completed graduation, only 4 (13.33%) had completed middle education and minimum ($n=1$, 3.33%) completed primary education.

The majority of mothers ($n=28$, 93.33%) were home maker followed by only 1 (3.33%) mother as government teacher; 1 (3.33%) mother was in business in experimental group. In control group 28 (93.33%) mothers were home maker followed by 1 (3.33%), a private teacher and businesswoman.

Greater number ($n=27$, 90%) of mothers belonged to Hindu religion and only 3 (10%) mothers were from Muslim religion in experimental group. Whereas, in control group 20 (66.66%) mothers belonged to Hindu religion and 10 (33.33%) mothers belonged to Muslim religion.

Income of family of a third of mothers ($n=10$, 33.33%) was below Rs 10,000 and minimum in case of 2 (6.66%) mothers, in range Rs 40,001-50,000 and above Rs 50,000 in experimental group whereas in control group 10 (33.33%) mothers family income was below Rs10,000 and minimum in case of 2 (6.67%) mother's family income in range Rs 40,001-50,000

The majority of mothers ($n=17$, 56.67%) were from nuclear family followed by 13 (43.33%) mothers from joint family in experimental group. In control group 22 (73.33%) mothers were from nuclear family and 8 (26.67%) from joint family.

Table 1: Frequency and percentage wise distribution of demographic variable of participants (N=60)

SI No.	Demographic variables	Experimental group		Control group	
		f	Percentage (%)	f	Percentage (%)
1	Age of mother in years				
	19-25	17	56.67	17	56.67
	26-32	13	43.33	13	43.33
2	Educational status of mothers				
	Primary	2	6.66	1	3.33
	Middle	2	6.66	4	13.33
	Secondary	8	26.67	6	20
	Intermediate	7	23.33	6	20
	Graduate	7	23.33	7	23.33
	Post-graduate	4	13.33	6	20
3	Occupation of mothers				
	Home maker	28	93.33	28	93.33
	Govt. teacher	1	3.33	-	-
	Private teacher	-	-	1	3.33
	Business	1	3.33	1	3.33
4	Religion of mothers				
	Hindu	27	90	20	66.66
	Muslim	3	10	10	33.33
5	Family monthly income				
	Below Rs. 10,000	10	33.33	10	33.33
	10001- 20000	5	16.66	9	30
	20001- 30000	8	26.67	5	16.67
	30001- 40000	3	10	4	13.33
	40001-50000	2	6.67	2	6.67
	Above 50,000	2	6.67	-	-
6	Type of family				
	Joint	13	43.33	8	26.67
7	Nuclear	17	56.67	22	73.33
	Area of residence				
	Rural	13	43.33	11	36.67
	Urban	17	56.67	19	63.33

The majority of mothers (n=17, 56.67%), were from urban areas and 13 (43.33%) mothers were from rural area in experimental group. In control group, 19 (63.33%) mothers belonged to urban area followed by 11 (36.67%) mothers were from rural area.

Assessing the Level of Labour Pain in Experimental and Control Groups during Active First Stage of Labour in Primigravida mothers (n=60)

Pre- and Post-test Scores of Labour Pain of Primigravida Mothers in Two Groups

The total pain score of the respondents was sub-divided into 5 categories such as no pain, mild pain, moderate pain, severe pain, and worst pain (Fig 1). Whereas no pain is in the lowest and the worst pain is in the highest category, it is interesting to note that in both the experimental and control groups, none of them responded in the no pain category.

Similarly, none of the participants in the experimental group was in the mild pain category in the pre-test whereas 7 participants of the control group were in the mild pain category in the pre-test. Earlier, the first intervention showed that there were 22 mothers of the experimental group in the moderate pain category and 20 mothers of the control group in the same category. Whereas, in the severe pain category 6 mothers were in the experimental group and 3 mothers were in the control group. While in the worst pain category there were 2 mothers in the experimental group and no mother in the control group.

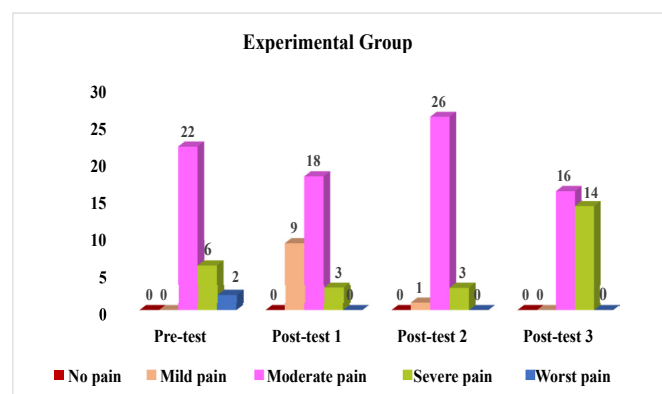


Fig 1: Frequency wise distribution of pre-test and post-test score of labour in experimental and control group

After the first intervention, out of 22 mothers in moderate pain category 9 moved to the mild pain category in the experimental group. Similarly, in the worst pain, category 2 mothers moved to the severe pain category in the experimental group, and among 6 mothers in the severe pain category 5 mothers moved to the moderate pain category in the experimental group.

The number of mothers in the second intervention from 18 to 26 shows that out of 9 mothers in the mild pain category after the second intervention, 8 mothers moved to the moderate pain category in the experimental group. Whereas, in the severe pain category 3 mothers in the first

intervention continue to remain in the second intervention. In the severe pain category, there was no increase in number of mothers in severe pain category. A crucial observation in the third intervention is that even though the number of mothers in moderate pain category after second intervention reduced from 26 to 16, in severe pain category the number increased from 3 to 14, so the increase in none of mothers in severe pain category in the third intervention was because 26 mothers were having moderate pain and 11 mothers moved to the severe pain category in the experimental group.

In the experimental group none of mothers were in the worst pain category, right from the second intervention. Whereas, in the control group 23 mothers were in severe pain category and 5 mothers were found in the worst pain category of pain in the third intervention. Similarly, in the control group 12 mothers were in the severe pain category which, after second intervention increased to 23 during the third intervention (no intervention given in the control group, but they were routinely taking Nursing care). This shows that the intensity of pain increases as the labour progresses and none of the mothers were found in the worst pain category because of olive oil back massage.

There were 23 mothers in control group in severe pain category compared to only 14 mothers in the experimental group so the lesser number of mothers in the severe pain category in the experimental group was due to intervention. Similarly, the number of mothers in moderate pain was only 16 on the third intervention. A lesser number of mothers in the experimental group in the severe pain category show that olive oil back massage has modifying effects in intensity and duration of labour progress.

Effectiveness of Olive Oil Back Massage on Labour Pain in Primigravida Mothers in Experimental Group

Table 2: Effectiveness of olive oil back massage on labour pain in primigravida mothers in experimental group

Experimental group (n=30)				
Series of observation	Mean	SD	Mean difference	't' value
Pre-test (O1)	5.63	1.691	1.26	15.425*
Post-test (O2)	4.37	1.520		
Pre-test (O3)	6.43	1.251	1.2	16.155*
Post-test (O4)	5.23	1.165		
Pre-test (O5)	7.27	1.112	0.9	5.572*
Post-test (O6)	6.37	0.964		

df(29) table value-1.699; Significant at p<0.05 level

Table 2 shows that in the experimental group 't' values were: O1-O2 (15.425), O3-O4 (16.155) and O5-O6 (5.572) whereas 't' values in control group were 8.266, 5.442 and 5.769, respectively. Hence, it concluded that olive oil back massage is significantly effective to reduce the level of pain in the experimental group.

Comparison of Pre-test Post-test Scores of Labour Pain in both Groups

Table 3 shows that the mean pre-test score of labour pain in the experimental group (5.63±1.691) was significantly lower than the mean pre-test score of labour pain in the control group as 4.70 (SD±1.393). 't' value obtained was 3.068 (table value= 1.671) at p<0.05 level of significance. This shows a significant difference in the level of labour pain between experimental group and control groups.

Table 3: Comparison of mean, standard deviation and 't' value of pre-test score of labour pain between experimental group and control group (n=60)

Group	Mean	SD	Mean difference	't' value
Experimental group	5.63	1.691	0.93	3.068*
Control group	4.70	1.393		

df(58)=1.671 at p<0.05

Comparison of post-test score of labour pain between experimental group and control group: The mean post-test 1 score of labour pain in the experimental group, 4.37 (SD±1.520) was significantly lower than the mean post-test 3 score of labour pain in the control group, 5.93 (SD±1.574) (Table 4). 't' value obtained 3.922 (table value = 1.671) at p<0.05 level of significance. This shows a significant difference in the level of labour pain between experimental group and control group. Hence, olive oil back massage was found to be effective to reduce labour pain in first stage of labour.

Table 4: Mean, standard deviation and 't' value of post-test score of labour pain in experimental and control groups (n=60)

Group	Mean	SD	Mean difference	't' value
Experimental group	4.37	1.520	1.56	3.922*
Control group	5.93	1.574		

df (58)=1.671, Significant at p<0.05 level.

Association between the pre-test Score of Labour Pain in Experimental Group with Selected Demographic Variables in First Stage of Labour in Primigravida Mothers

The fisher was calculated to find out the association between the experimental group's pre-test score

of labour pain with their selected demographic variables (Table 5). No significant association was found in the level of labour pain with regard to age, and education, only association was found with the type of family, in the experimental group (at $p < 0.05$).

Table 5: Association between the pre-test score of labour pain in experimental group with their selected demographic variables (n= 30)

Sl. No.	Demographic variable	Mode Rate pain	Severe pain	Worst pain	Fisher	'P' value	df
		f	f	f			
1	Age of mothers				0.548	1.000	2
	19-25 years	13	3	1			
	26-32 years	9	3	1			
2	Education of Mothers				8.164	0.688	10
	Primary education	1	1	0			
	Middle education	2	0	1			
	Secondary education	7	1	0			
	Intermediate	5	2	0			
	Graduate	5	1	1			
	Postgraduate	2	1	0			
3.	Type of family				5.878	0.041*	2
	Joint	7	5	0			
	Nuclear	15	1	2			

df (2) =5.99 at $p < 0.05$.

Response of Primigravida Mothers regarding Olive Oil Back Massage in Experimental Group

Interviews were taken in local language to explore the response of mothers regarding olive oil back massage after the delivery of the baby. All transcripts were read in depth to obtain meaning from them. The researcher derived the meaning of each statement separately. The statement and the meaning were then translated into English. Therefore, the researcher was providing olive oil back massage to primigravida mothers and after the delivery explored their responses as under.

While the authors asked mothers to narrate about 'discomfort experienced during olive oil back massage', all the mothers reported that they did not experience discomfort during olive oil back massage.

The mothers were asked, 'what comfort felt during olive oil back massage'. The majority, i.e. 18 (60%) of mothers reported that they 'felt comfort during back massage' followed by 15 (50%) mothers who mentioned that 'I felt less pain after massage'. Whereas 11 (36.66%) mothers said that 'it was a nice experience', 11 (36.66%) mothers mentioned

that they 'felt hot on my back while massaging' and 'felt sleepy during back massage'. While 6 (20%) mothers responded that 'I felt relaxed' and 'less tiredness during back massage', only 2 (6.66%) mentioned that 'labour pain reduced'.

Discussion

The present study showed the effectiveness of olive oil back massage during the active first stage of labour pain in primigravida mothers in the experimental group and control group. In the experimental group, the 't' values were 15.425, 16.155 and 5.572 whereas 't' value in the control group were 8.266, 5.442 and 5.769 respectively. Hence, it concluded that olive oil back massage is effective in reducing the level of pain in the experimental group.

The present study findings partially consisted of the study conducted by Mir & Bashir (2022). The results finding revealed that post-test 1 assessments of labour pain intensity scores of the control and experimental group was 2.37 with a t-value (5.960) which was found to be statistically significant ($p = 0.0000$) at $p < 0.05$ level of significance and the difference between mean post-test 2 assessments of labour pain intensity scores of control and experimental group was 5.23 with t-value (12.502), which was also found to be statistically significant ($p = 0.0000$) at $p < 0.05$ level of significance. There was a significant decrease in the intensity of labour pain score in the experimental group as compared to the control group after the application of olive oil back massage at 0.05 level of significance. The study concluded that olive oil back massage is effective in reducing labour pain intensity among primigravida women during the first stage of labour.

Recommendation

- A similar study can be conducted on (a) third-trimester low back pain in antenatal mothers (b) a large population to explore the efficacy of massage techniques on labour pain in primigravida mothers.
- A comparative study can be done on the effectiveness of various non-pharmacological measures for labour pain.
- A comparative study can also be conducted between primigravida and multigravida mothers in labour.

Implications in Nursing

- Olive oil back massage procedures can be conducted in hospital settings and maternity centres to promote the benefits of olive oil back massage.

- For regular use in practice during the antenatal period, all mothers can relieve back pain during the gravid uterus and labour process.
- The midwife and the nursing staff may be inspired to implement various comfort measures to control the intensity of labour pain during the first stage of labour.

Conclusion

Effectiveness of olive oil back massage in primigravida mothers in reduction of labour pain during the first stage of labour was assessed among 60 primigravida mothers. Post-test score of labour pain in the experimental group was significantly lower than the mean pre-test score of labour pain. Hence, it is possible to reduce the level of labour pain by olive oil back massage during the first stage of labour in experimental group.

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सही भोजन सभी को कैसे सुलभ हो?

भोजन मनुष्य की आधारभूत जरूरत है। शरीर के रखरखाव के लिए उसे खाने को नहीं मिलेगा तो वह कुछ भी नहीं कर सकेगा, बल्कि उसका जीवित रहना भी असंभव हो जाएगा। समूचे विश्व में खाद्यान्न का उत्पादन, वितरण और सभी को इसकी उपलब्धता सुनिश्चित करने, और इन दिशाओं में अनुसंधान को बढ़ावा देने की दृष्टि से विश्व खाद्य संगठन (एफएओ) कार्यरत है। एफएओ यथोचित नीतियां बनाता है और राष्ट्रों को इनके क्रियान्वयन पर संसाधन और दिशानिर्देश प्रदान करता है। संप्रति विश्व के करीब 80 करोड़ व्यक्ति भुखमरी या कुपोषण से ग्रस्त हैं। विश्व के सभी क्षेत्रों में भोजन सहजता से, बगैर आर्थिक दबाव के उपलब्ध हो, ऐसे उपाय ईजाद किए जाने पर प्रतिवर्ष 16 अक्टूबर का दिन विश्व खाद्य दिवस बतौर मनाया जाता है। इस दिन खाद्य उपलब्धता की मौजूदा कार्यनीतियों की समीक्षा, और इनमें यथोचित संशोधन पर विचार होता है, और वैश्विक समुदाय से एकजुट होकर खाद्य असुरक्षा के मूल कारणों का समाधान करने का आह्वान किया जाता है। यह दिन टिकाऊ कृषि को बढ़ावा देने, खाद्य अपशिष्ट घटाने और समान खाद्य वितरण सुनिश्चित करने संबंधी नीतियों की पुनरीक्षा की जाती है।