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A comparative study to evaluate the efficacy of applying ice packs versus applying manual pressure on discomfort at the pentavalent vaccination site among newborns who were attending the immunization clinic at a selected hospital in Coimbatore.

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Abstract
A field experiment was conducted in Karbala Governorate/Tawrij District in 2024 on a silty clay soil to investigate the role of the chisel plow in loosening the hardpan layer and promoting crop growth. A New Holland TD80 tractor was used in this experiment. Two components were examined: operating speed (2.80, 4.65, and 6.15 km/h-1), and plowing depth (50 and 65 cm). Mechanical unit technical metrics such drawing force, slippage percentage, fuel usage, and maize plant output were examined. The experiment used a three-replicate Randomized Complete Block Design (RCBD). The lowest slippage percentage was 6.90% and the lowest traction force was 618.11 kg at 2.80 km/h-1. The lowest fuel usage was 9.99 L/ha and the maximum plant output was 8.05 t/ha at 6.15 km/h-1. A 50 cm plowing depth yielded the lowest pulling force (613.21 kg), slippage (7.57%), and fuel usage (11.91 L/ha). The maximum plant output was 6.76 t/ha at 65 cm. All attributes were significantly affected by the speed-plowing plot interaction. Operating speed, traction force, plant productivity, slippage, Chisel Plow.

Keywords: Chisel Plow, Hardpan Layer, Crop Growth

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Introduction
The children are extremely valuable to their families. It is for this reason that parents select immunization as a preventative approach; routine immunization is an experience that practically all children have. Parents want their children to be protected from infections. Immunization is a tried-and-true method for preventing and eradicating infectious diseases that pose a significant risk to human life. It is estimated that vaccination prevents approximately 2 million deaths annually. Immunization is one of the most cost-effective expenditures in health care, and there are techniques that have been demonstrated to make it accessible to many populations, including those that are difficult to reach and vulnerable. There are well defined target groups for vaccination, it is possible to efficiently implement vaccination through outreach programs, and vaccination does not involve any significant changes to one's lifestyle.

The pentavalent vaccination is a combination vaccine that consists of five separate vaccines that have been blended into a single vaccine. Its purpose is to protect individuals from five diseases that have the potential to be fatal. A vaccination that protects against Haemophilus influenza type B, which is a bacterium that causes meningitis, pneumonia, and otitis, as well as whooping cough, tetanus, hepatitis B, and diphtheria, is the most prominent example.

It is important to note that routine immunization is associated with a large burden of discomfort and suffering, which can lead to major medical and mental effects. These consequences include increased oxygen use and abnormalities in blood glucose metabolism. In addition, the child may be subjected to long-term effects as a result of the experiences of pain that they have at an early age.

Relieving pain in newborns and infants can be accomplished through the use of both pharmaceutical and non-pharmacological approaches. techniques that do not include the use of pharmaceuticals are alternatives to techniques of pain control. These methods involve making non-invasive, small-scale attempts to alleviate pain. Among these approaches are the following: changing positions, providing kangaroo care and touch, massaging, offering teats, administering sucrose, breastfeeding, playing music, and distracting the infant. In addition, treatments such as the use of cold, massage, vibration, injection techniques, and manual pressure are utilized in order to alleviate pain during invasive procedures.

OBJECTIVES

1. To assess the effectiveness of ice pack application on pain during pentavalent vaccination among infants.

2. To assess the effectiveness of manual pressure application on pain during pentavalent vaccination among infants.
3. To assess the level of pain during pentavalent vaccination among control group.
4. To compare the findings between ices pack application, manual pressure and control group.

METHODS AND MATERIALS

The quantitative research design that was utilized for this study was a quasi-experimental post-test only control group design. Infants who are undergoing pentavalent vaccination are the subjects of the independent variables, which include the application of ice packs and physical pressure. Pain experienced by newborns during pentavalent vaccination is the dependent variable in this study in question. Age, gender, birth order, breastfeeding status of the infant, current pentavalent dose, and past exposure to intramuscular injection are the demographic characteristics that are currently being considered. The immunization clinic of the paediatric outpatient department (OPD) of a designated tertiary hospital and research centre in Coimbatore served as the location for the study. In the current study, the population consists of infants who are receiving their first, second, or third dose of the pentavalent vaccination during the time period in which statistical data is being collected. The selection of samples was accomplished by the approach of purposeful sampling. There was a total of sixty infants included in the sample size for this particular research project. Twenty of these infants will be assigned to Experimental Group I (the Ice pack group), twenty will be assigned to Experimental Group II (the Manual pressure group), and twenty will join the control group. The list of traits that are necessary for membership or eligibility in the target population is included in the sampling criteria, which are also known as eligibility requirements.

Inclusion Criteria

- Infants (6 weeks-14 weeks).
- Parents who are willing to participate in the study.
- Infants receiving pentavalent vaccination in the selected immunization clinic.

Exclusion criteria

- Infants who are critically ill.
- Pre mature and low birth infant.

RESULTS

Table 1: Frequency and percentage distribution of the samples according to demographic variables

	Demographic profile	**Ice group**		**Manual pressure group**		**Control group**		**Total**	
		Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**
	Age in weeks								
	6-8 wks.	7	35	9	45	12	60	28	46.67
	9-11wks.	8	40	4	20	2	10	14	23.33
	12-14wks.	3	15	2	10	5	25	10	16.67
	15-17wks.	2	10	5	25	1	5	8	13.33
	Gender								
	Male	9	45	10	50	14	70	33	55
	Female	11	55	10	50	6	30	27	45
	Birth Order								
	First	17	85	9	45	11	55	37	61.67

	Second	3	15	10	50	8	40	21	35
	Third	0	0	1	5	1	5	2	3.33
	More than third	0	0	0	0	0	0	0	0
	Child's is on breastfeeding								
	Yes	20	100	19	95	19	95	58	96.67
	No	0		1	5	1	5	2	3.33

The data presented in Table 2 above reveals that nearly half of the children, or 46.67 percent, were between the ages of 6 weeks and 8 weeks, while just 13.33 percent were between 15 and 17 weeks. There were 55% male youngsters and 45% female children in the group.

According to the birth order, the majority of children were born first, amounting to 61.67%, while only 3.33 percent were born third. Based on the breastfeeding status of the individuals, 96.67 percent of them were breastfeeding, whereas 3.33 percent were not breastfeeding.

Both the ice pack group, which consisted of twenty children (one hundred percent), the manual pressure group, which consisted of nineteen children (ninety-five percent), and the control group, which consisted of nineteen children (ninety-five percent), comprised the majority of the subjects.

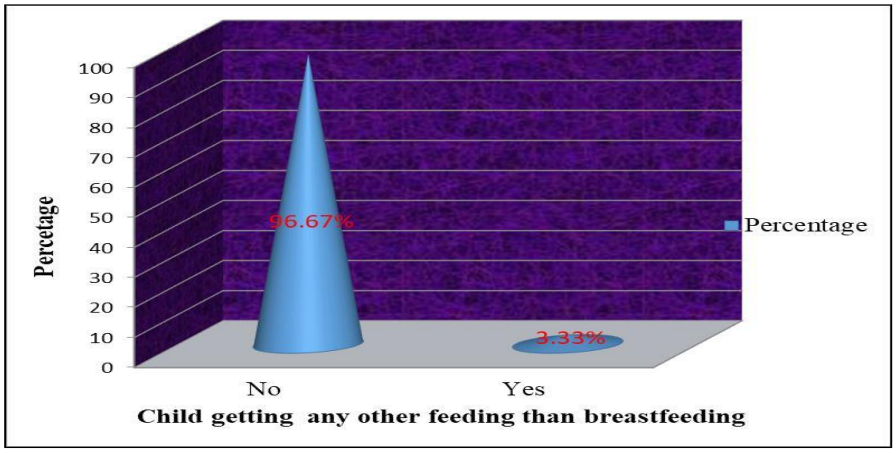

Fig 1: A cone diagram representing the distribution of subjects according to children getting any feedings other than breastfeeding.

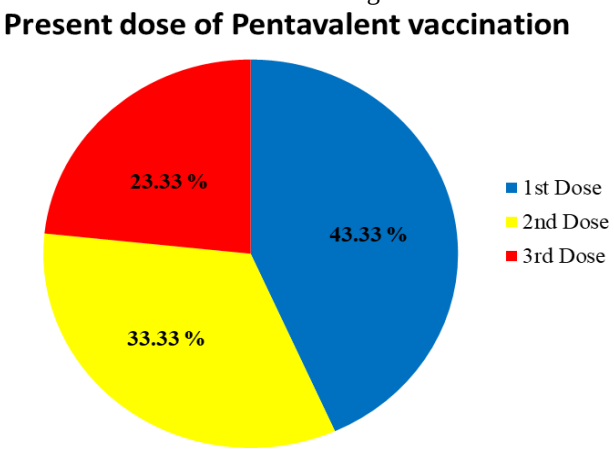

Fig 2: A pie diagram representing the distribution of subjects according to present dose of pentavalent vaccination. The 43.34% of children were come for first dose of pentavalent vaccine, and 23.33% were for third dose.

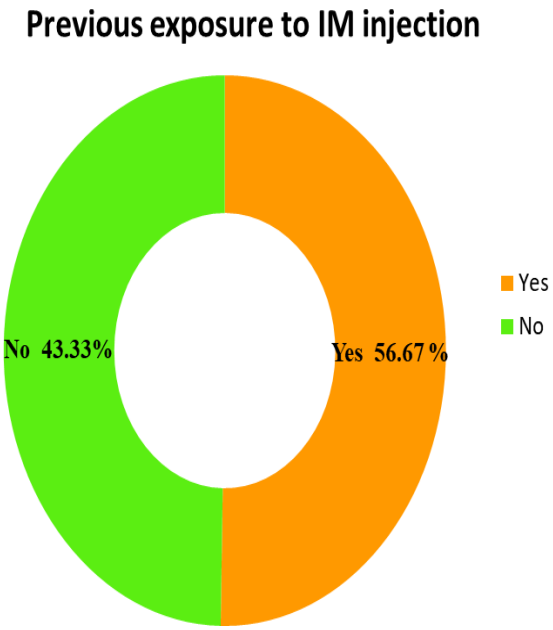

Fig 3: A doughnut diagram representing the distribution of subjects according to previous exposure of IM injection. More than half (56.67%) of children had previous IM injection exposure and 43.33% were not had any exposure.

Section-II (a): Frequency and percentage distribution of the samples according to the level of pain in ice pack application group, manual pressure application group and control group

Table 2: Frequency and percentage distribution of the samples according to the level of pain in ice pack application group, manual pressure application group and control group

N=60

Groups	**Mild**		**Moderate**		**Severe**	
	F	**%**	**F**	**%**	**F**	**%**
Ice pack	11	55%	7	35%	2	10%
Manual pressure	0	-	9	45%	11	55%
Control group	1	5%	2	10%	17	85%

Above Table 3 shows that more than half (55%) of samples in ice pack application group were having mild pain. In manual pressure group also more than half (55%) were having severe pain. In control group only 5% were having mild pain and majority (85%) were having severe pain.

Section II (b)

Table 4: Comparison of the post-test pain level readings of the samples between the ice pack, manual pressure and control group.

N= 60

Sources	**Sum of square**	**Degree of freedom**	**Mean square**	**"F" Value**	**At 5% "F" Value**
Between the groups	39.2	2	44.6		
Within the groups	76.2	57	1.33		

Total	165.4	59	45.93	33.55	3.15
Level of significance	At the level of 0.05				

The Table 4 shows that there is a significant reduction in pain level in both the interventional group at 0.05 level of significance with ANOVA 'F' value of 33.55. Thus, it shows both the interventions were effective in reducing level of pain during pentavalent vaccination.

CONCLUSION

It was the primary objective of the study to determine whether or not the application of ice packs or manual pressure was more successful in alleviating pain at the pentavalent vaccination site in infants who were attending the immunization clinic at a particular hospital in Coimbatore. The NIPS scale was used to collect data from sixty newborns, and all of the acquired information was then evaluated using descriptive and inferential statistics, and the results were presented in the form of tables and graphs.

At a significance threshold of 0.05, the outcomes of the study showed that there is a substantial reduction in the amount of pain experienced by all three groups. The ANOVA 'F' value was 33.55, indicating that this reduction was significant.

Based on the findings of the study, it was determined that there is a significant difference between the three groups: the control group, the group that applied ice packs, and the group that applied pressure manually. When it came to minimizing the amount of pain that infants experienced during the pentavalent vaccine, both strategies were successful.

An experience that was beneficial to the investigator was the process of doing the study. The level of pain that newborns experienced throughout the pentavalent immunization was easier to comprehend and evaluate thanks to this. In addition, the study made it easier for the researcher to recognize the function that ice packs and physical pressure play in reducing the level of discomfort experienced by pentavalent vaccination recipients. These techniques can be incorporated into holistic nursing care.

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