Comparison of "The Medical Home Model" and "Follow-up in Primary Care" for the Follow-up of Very Low Birth Weigth Infants

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VLBW Infants: Survival

- As in many countries, in Turkey, advances in neonatology have improved the survival of very low birth weight (VLBW) infants whereas their risks for developmental difficulties and needs for specialised health care have not decreased.

Atasay B et al. Tuk J Pediatr 2008

Risks of VLBW Infants

►Compared to normal birth weight infants VLBW infants are at risk for

- Growth problems
- Deficiencies in vaccination
- High rates of readmission and rehospitalization
- Developmental difficulties

Wheeler BJ. Meonatal Netw 2009

Esposito et al., Early Hum Dev 2009

Underwood et al., J Perinatol 2007

Health Care Follow-up of VLBW Infants

- The follow-up of VLBW infants in Turkey as in other low and middle income (LAMI) countries is conducted in primary health care clinics and not necessarily by the same physician or health care team.

Medical Home Model

- Has been defined as a health care model that provides all preventative and curative care for
  - Health and developmental follow-up, support
  - Appropriate treatment

  for children with special needs under one roof.

American Academy of Pediatrics Committee on Hospital Care. Pediatrics 2003

Characteristics of "Medical Home Model"

- Accessible
- Comprehensive
- Coordinated
- Compassionate
- Culturally effective
- **Continuous**
- **Family-centered**

American Academy of Pediatrics. Pediatrics 2004

Study Aim

- To determine the **applicability** of the medical home model in a tertiary health center in Turkey
- To examine its **efficacy** compared to the “standard primary care model” for the health care needs of VLBW infants at 3-months corrected age
- ZTB hospital is the high risk maternity hospital with 25 000 birth, 700-800 VLBW infants born / year.

Hypothesis

Applicability

1. The usage of the outpatient follow-up clinic developed based on the “medical home model” will be continued throughout the study.
2. Bringing to the appointments by their families regularly up to 3-months corrected age will be obtained.
3. Continuous follow-up by the same doctor will be supplied.
4. Medical consultations will be concluded within two weeks.

Hypothesis

Efficacy: Compared to infants followed by standart primary care, rates of:

1. Rehospitalization and emergency care visits will be lower
2. Vaccination, appropriate use of vitamin D and iron prophylaxis, breastfeeding
3. Adequate growth
4. Rates of developmental follow-up, early identification and referral for developmental delay

will be statistically higher in VLBW infants followed by the medical home model.

METHODS

Methods

Study Design

- A quasi-experimental longitudinal study design with blinded outcome evaluations was used.

Participants

- All consecutive infants,
  - born at ZTB hospital with BW ≤ 1500 grams
  - treated in the NICU for ≥ 10 days
  - lived in Ankara
  - provided informed concent were enrolled.

Methods

Procedures

Control Group

- After enrollment and standard NICU care, control group infants were discharged to recieve standard primary care in their communities.

Methods

Procedures

Intervention group

- After the control group was discharged, ZTB hospital developed an outpatient follow-up clinic based on the “medical home model”.
- After this model was instituted, the intervention group was enrolled.
- The intervention group received health and developmental follow-up at ZTB hospital within the medical home model.

Methods

Procedures

- At 3-months corrected age, control and intervention groups were seen in the clinic for the outcome evaluations.

RESULTS

Sociodemographic Characteristics

Variables	P value
Gender	0.516
Birth weigth	0.644
Gestational age	0.316
Maternal age	0.236
Maternal education	0.522
Maternal employment	0.102
Paternal age	0.749
Paternal education	0.502
Paternal employment	0.873

Applicability (Hypothesis 1)

- “Applicability” was assessed with four variables:

  1) The “medical home” fascilities were sustained throughout 3 months.

  2) Most families (%93) in the intervention group kept all follow-up appointments and received the intervention.

  3) Continuous follow-up by the same doctor (%100) was supplied.

  3) The majority of medical consultations (61%) were concluded the same day, the remaining were concluded within two weeks.

Efficacy (Hypothesis 2): Health Indicators

Health Indicators	Control Group (n=66)	(%)	Intervention Group (n=40)	(%)	p
Rehospitalization					
Absent	58	87.9	31	77.5	0.255
Present	8	12.1	9	22.5	
Readmission					
Absent	49	74.2	30	75.0	1.0
Present	17	25.8	10	25.0	
Vaccination					
Missing	0	0	0	0	1.0
Complete	66	100	40	100	
Appropriate use of vitamin					
Irregular	1	1.5	1	2.5	0.323
Regular	65	98.5	39	97.5	
Adequate growth					
Absent	58	87.9	36	90.0	0.728
Present	3	12.1	4	10.0	
Breastfeeding					
Absent	20	30.3	11	27.5	0.578
Continue	46	69.7	29	72.5	

Efficacy (Hypothesis 2): Health Indicators

Health Indicators	Control group (n=66)	(%)	Intervention group (n=40)	(%)	p
Unnecessary emergency visit					
Absent	43	65.2	37	92.5	< 0.05
Present	23	34.8	3	7.5	
Continuity of care					
Absent	49	74.2	0	0	<0.001
Present	17	25.8	40	100	

Efficacy: Developmental Indicators

Developmental Indicators	Control Group (n=66)	(%)	Intervention Group (n=40)	(%)	p
Concerns about learning, understanding					
Not asked	57	86.4	0	0	<0.001
Asked	9	13.6	40	100	
Suggestions about play activities					
Not given	55	83.3	0	0	<0.001
Given	11	16.7	40	100	
Early identification and referral for developmental delays					
Not identified	16	59.3	1	12.5	<0.05
Identified and referred	11	40.7	7	87.5	
Developmental Problem					
Absent	39	59.1	32	80.0	<0.05
Present	27	40.9	8	20.0	

Discussion

Discussion

- This study was the first to evaluate the efficacy of the medical home model for high risk infants in a middle income country.
- The study adds to information on studies conducted mostly in the US, as most studies on efficacy have used parental satisfaction measures whereas we have provided information on objective measures such as hospital visits and rehospitalization rates.

Discussion

- The study is a controlled design with blinded outcome evalution.
- Although a randomized trial is preferable to prevent selection bias, this was not feasable due to the ethical problems in not offering care that became available.
- There was no difference between groups at baseline apart from being born during different seasons, which could bias outcomes related to illness and rehospitalization. However the bias would have been in favor of the control group.

Generalizability

- The comparison of our sample to Turkish National Statistics (TNSA 2008) shows that our sample is generalizable in terms of primary school education of mothers and less than national sample in high school education and above.

	TNSA 2008	Study Sample
Primary school graduate	% 89	% 90
High school graduate	% 25	% 10

Discussion

- Paralel to previous studies our findings suggest that the medical home model decreases unnecessary emergency visits.

Cooper ve ark. J Perinatol 2007

Cohen ve ark. Child Care Health Dev 2010

Discussion

- The immunization and breast feeding rates were similar between groups and immunization rates were higher than previously reported rates for premies. This finding implies the success of our primary health system in providing these services.

Batra et al. Pediatrics 2009
Esposito et al. Early Human Dev 2009
Erdeve et al. Acta Paediatr 2008
Wheeler BJ. Neonatal Netw 2009
Zachariassen et al. Acta Paediatr 2010

Discussion

- Our findings imply that infants in the medical home model group versus the primary care group more often received developmental services.
- The finding that there were more infants with developmental delay in the intervention group needs to be investigated further in longer follow-up studies.

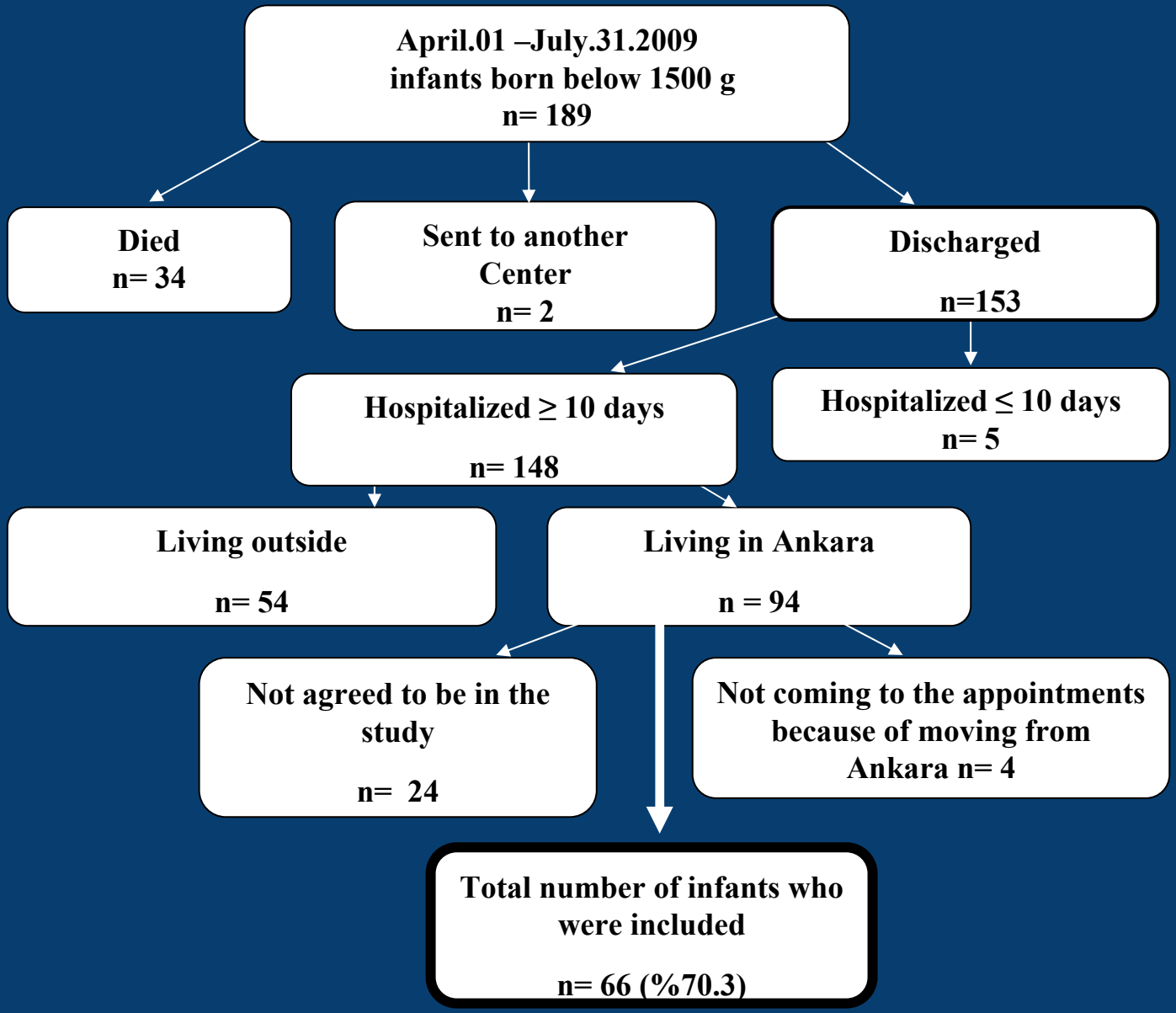
Conclusions and Implications

- This study has demonstrated the applicability and efficacy of the “medical home model” in the short term follow-up of VLBW infants in a tertiary health care center in Ankara.
- The primary care system in Ankara was found to be as effective as the medical home model provided by ZTB in addressing all but
  - Continuity of care
  - Emergency care visits
  - Developmental services

Conclusions and Implications

- The medical home model may provide better access to developmental services for very high risk newborns until the primary care system is trained and better equipped to address these issues.
- The findings are hoped to enlighten studies that will examine further the applicability and effectiveness and the cost:benefit of this model in Turkey and other countries.

Sample: Control Group



Sample: Intervention Group