

Epidemiology of hepatitis B and hepatitis D in Turkey

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PubMed – 26 articles
Turkish Medline – 42 articles
↓
43 articles

Sifting the evidence for sound studies with a take home message is laborious and the yield disappointing

BMJ, 2003

Prevalence of HBV - HDV (1980-2000)

Group (n)	Marker	1980-1990	1990-2000		Mean
"Healthy" adults (6 800 000)	HBsAg	6.8 %	5.9%	p<0.05	6.3 %
Health care workers (14 000)	HBsAg	5.8 %	3.6 %	p<0.05	4.7 %
Chronic liver disease (5 000)	HBsAg	60 %	56 %	p< 0.05	58 %
HBsAg positives (14 000)	Anti HDV	5.3 %	6 %	p>0.05	4.7 %
HBV related chronic liver disease (3 000)	Anti HDV	38 %	27 %	p<0.05	30.6 %

Regional differences (1980-2000)

Eastern and Southeastern Anatolia:

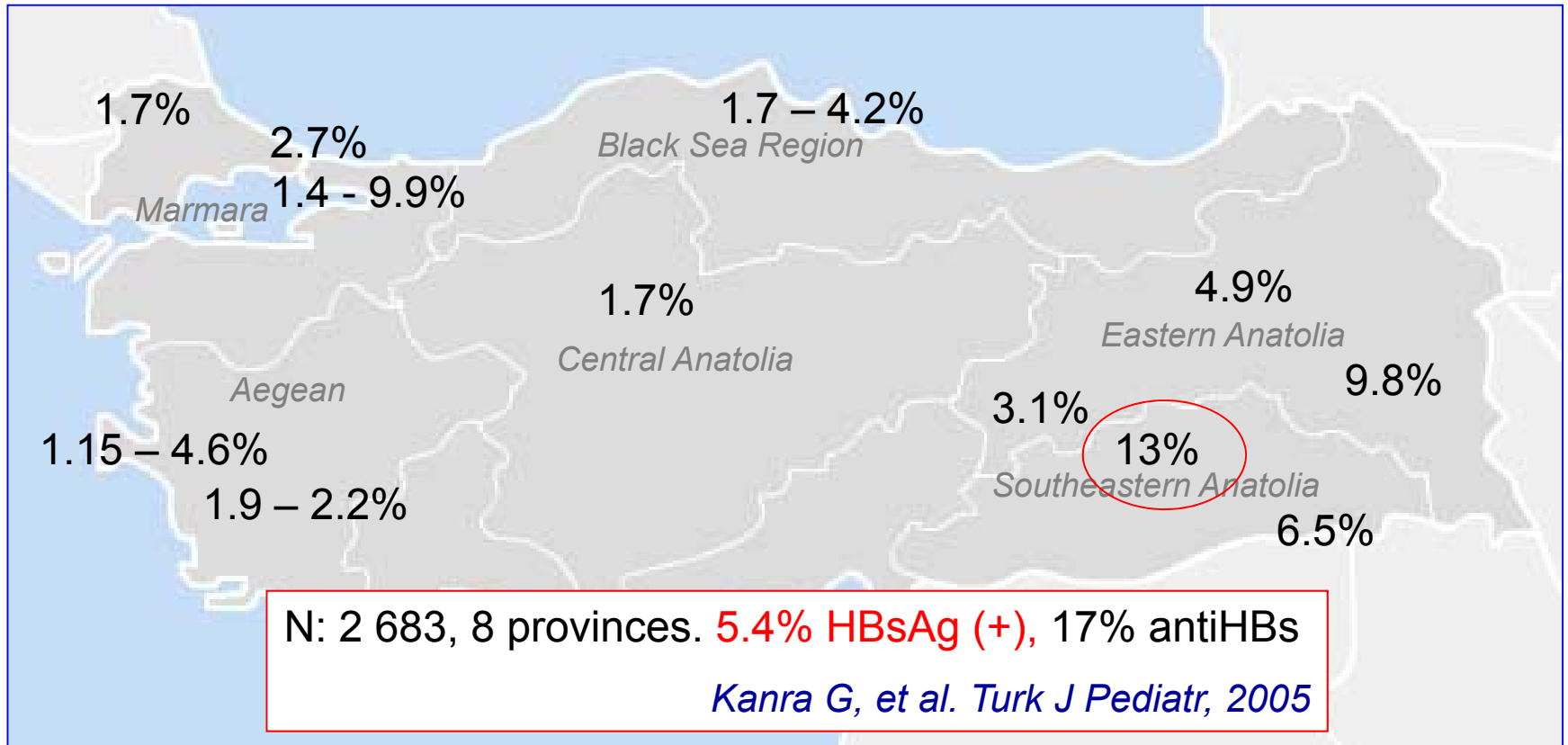
- HBsAg prevalence: 8.8%
- HBsAg positivity among chronic liver disease: 68%
- AntiHDV prevalence among HBsAg carriers: 7.2%



Lower socioeconomic and educational status

Değertekin H. Hepatit B, 2003
Mıstık R, Balık İ. Viral Hepatit, 2001

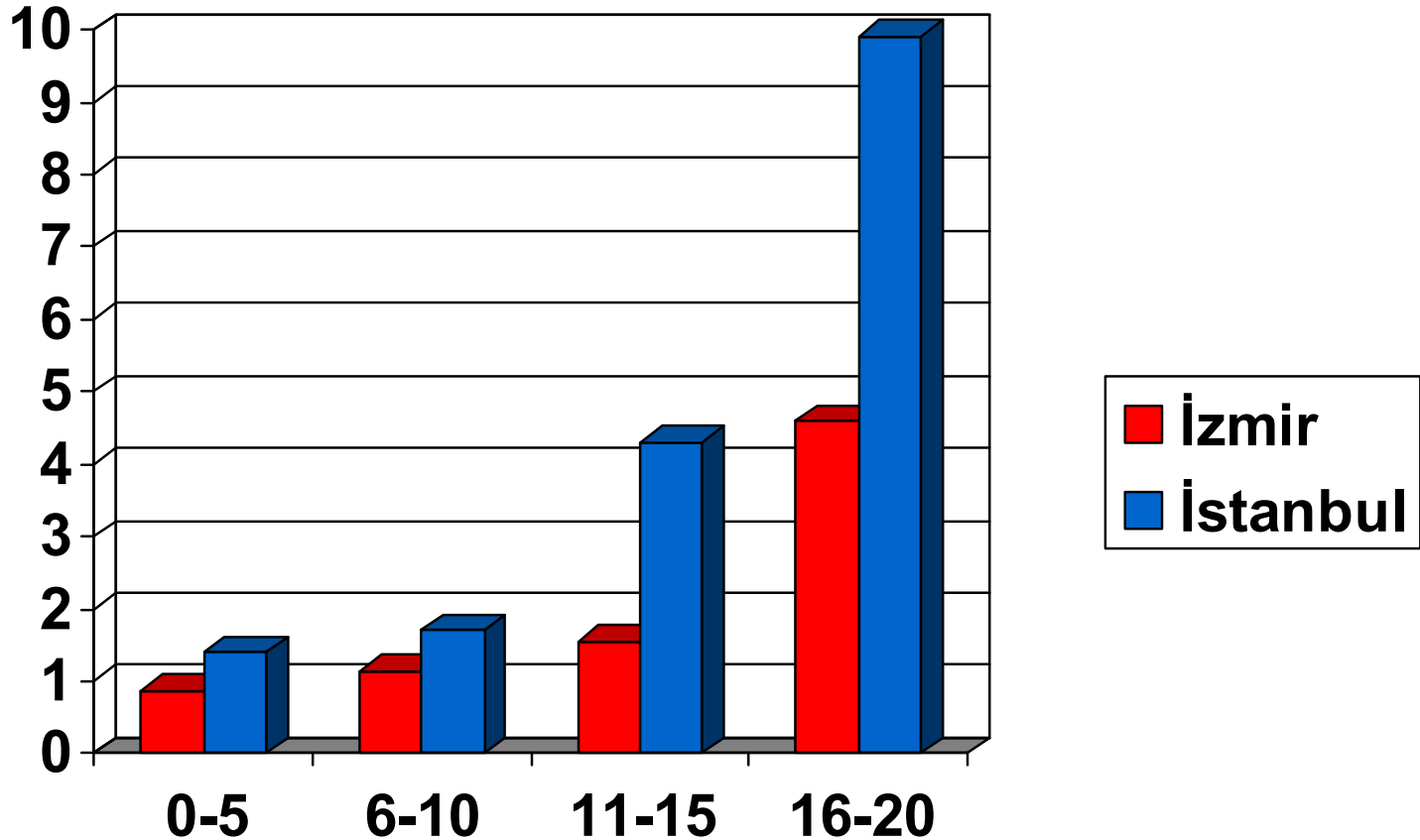
HBsAg prevalence (0 -18 years) 1990-2000



• Mostly based on retrospective studies, evaluating out-patient children admitted to the local hospitals

Mistik R, Balık İ. Viral Hepatit, 2001

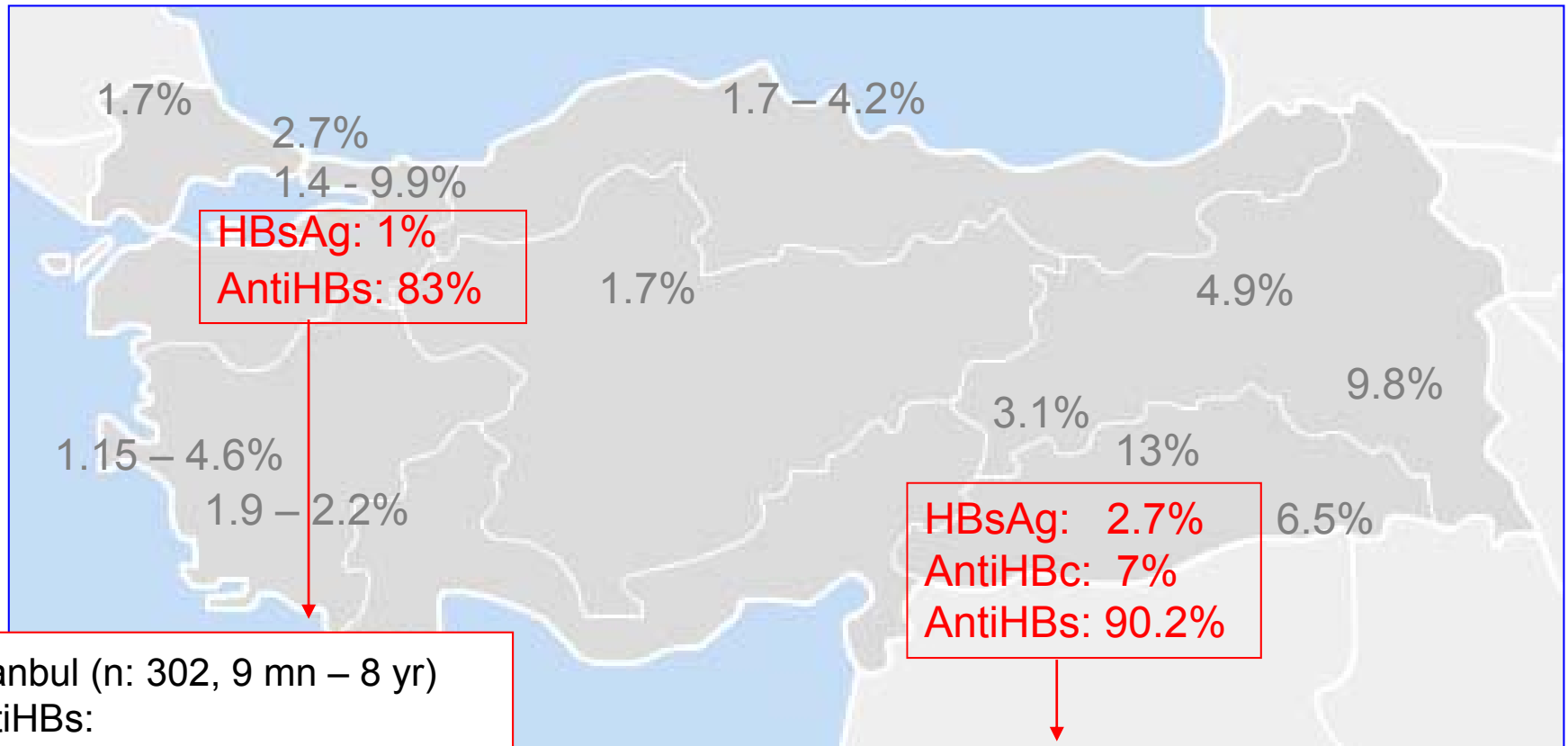
HBsAg prevalence - Age relation



Pasha A et al. Gulhane Tıp Derg 1999;41:325-30 → n: 267 children (İstanbul)

Tansuğ Ş et al. Viral Hepatit Derg 1999;2:96-109 → n: 8591 children (İzmir)

HBsAg prevalence (0 -18 years) 2001-2008



İstanbul (n: 302, 9 mn – 8 yr)
AntiHBs:
9 months – 3 years: 90.4%
3 – 5 years: 89.5%
5-8 years: 73% (1% HBsAg+)

Nalbantoğlu B, 2008

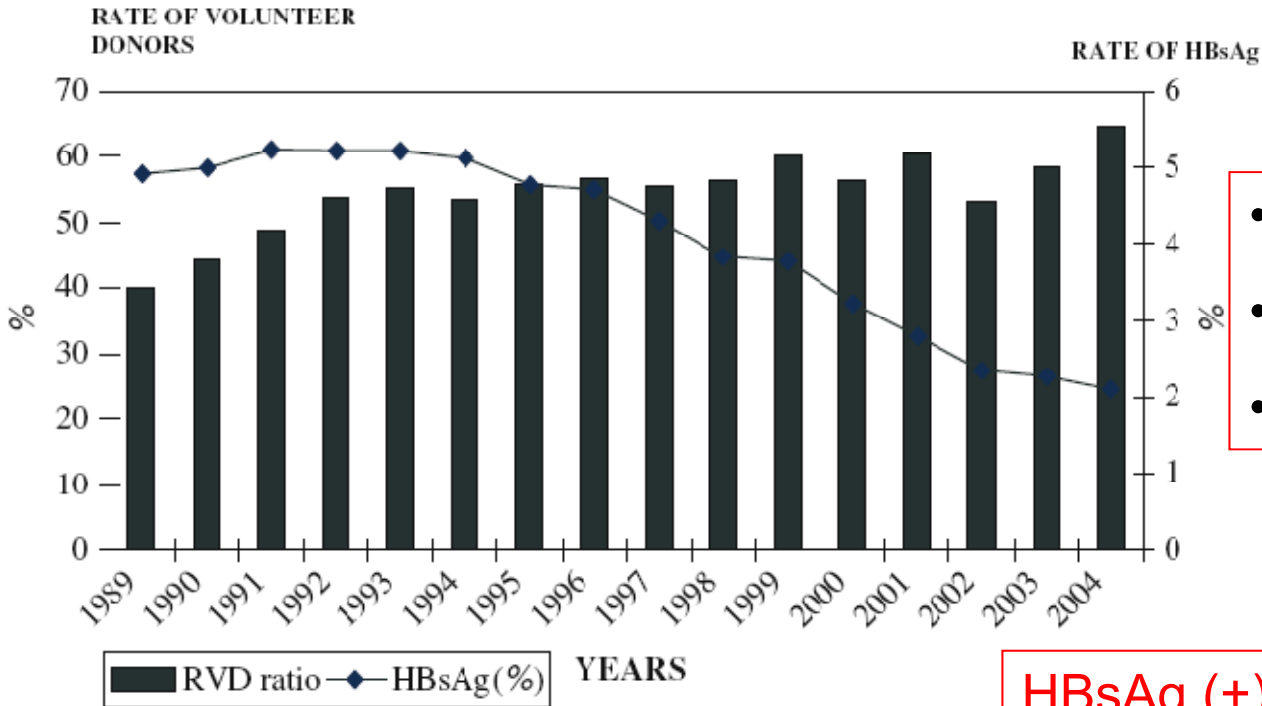
Mardin → Cross-sectional study (n: 802) based on systematic sampling method, representing 6 – 17 years old school children (n:147 200) of the area.

Dikici B et al. Turk J Med Sci, 2009

Pregnancy - HBsAg prevalence (%)

Region	City	Investigator (1990s)	N	sAg (eAg)	Investigator (2000s)	N	sAg (eAg)
Marmara	İstanbul	Çepni, 1996	4078	4.4	Karaca, 2003	460	4.7
		Adatepe, 1997	2564	7.5	Saveci, 2005	197	1.5
	Bursa	Mıstık, 1993	602	3.1	Api, 2008	236	3.9
Aegean	İzmir	Erensoy, 1996	760	4.2 (15.2)	Yegane, 2003	760	4.2 (9.3)
	Muğla	14 763 → 4.2%			4 611 → 3.6%		
Mediterr.	Mersin				Börekçi, 2004	114	3.5
Central	Ankara	Mete, 1993	2831	p=0.07	001	451	7
		Özsoylu, 1993	2667				
	Kayseri	Abacı, 1995	400	3.8			
Black sea	Rize				Atılgan, 2009	1130	2.56
Eastern	Erzurum	Kadanalı, 1997	282	6.3			
SouthE.	Urfa				Harma, 2003	136	7.3 (0)
					Aslan, 2001	450	4.6 (9.5)
	Adiyaman				Kölgeliler, 2009	677	4.7

Blood donors – Turkish Red Crescent



- 1989 to 2004 -16 years
- 22 centers
- 6 240 130 blood donors

HBsAg (+)

5.23% (1991) → 2.10% (2004)

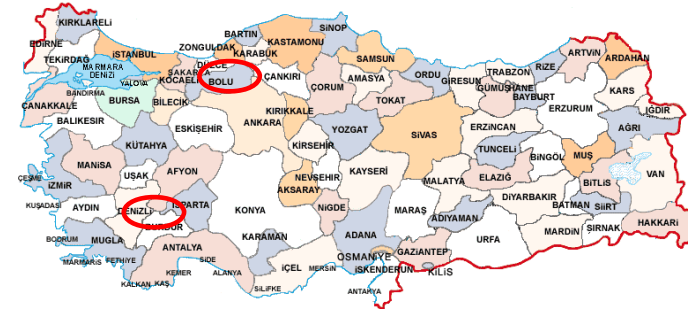
p=0.001

Blood donors – 2 (2000-2009)



	Izmir n:61409	Istanbul n:19499	Kocaeli n:28027	Isparta n:51361	Konya n:52454	Adiyaman n:12384	Van 17200	
2000		2,96	0,68	1,79	1,6		3,67	
2001		2,62	2,60	1,74	1,7		2,57	
2002	2,13	2,16	2,41	1,54	2,1	3,1	1,3	
2003	2,17	1,88	1,55	0,90		2,3	2,1	
2004	1,9	N: 242 334 → 1.8%						
2005	1,76	1,98		0,84		3,0		
2006	1,94	1,25		0,91		3,7		
2007				0,92		3,5		
2008						3,1		
	2,0	2,06	1,9	1,1	1,8	3,3	2,4	

General population-1



Isparta province, 2006-07

Population (≥ 18 years): 134 983 \rightarrow Study population: 2852 (71.5% of target)

Random sampling from 3 rural villages.

Markers were determined by card test, positives were confirmed by EIA

Mean age: 42.5 ± 14.4

HBsAg: 2.5%

AHBs: 16.2%

Significant correlation between HBsAg (+)

- Low educational status ($p=0,001$)
- Male gender ($p=0,009$)
- Increasing age ($p=0,017$)

Zeynep Akcam F, et al. Int J Infect Dis 2009

Bolu province, 2003

Population: 74 235 \rightarrow Study population: 2204 (rural and urban regions)

HBsAg: 2.7%

Karabay O, et al. Turk J Gastroenterol 2004

General population-2



Tokat province

Population (≥ 18 years): 530 000

Study population: 1095

Random sampling from 70 regions selected by a cluster sampling method.

Mean age: 41.4 17 (18-95)

HBsAg: 5.5%

AHBs: 22.8%

No significant difference between

- Men vs women
- Living in rural vs urban area

General population -3

Erzurum province

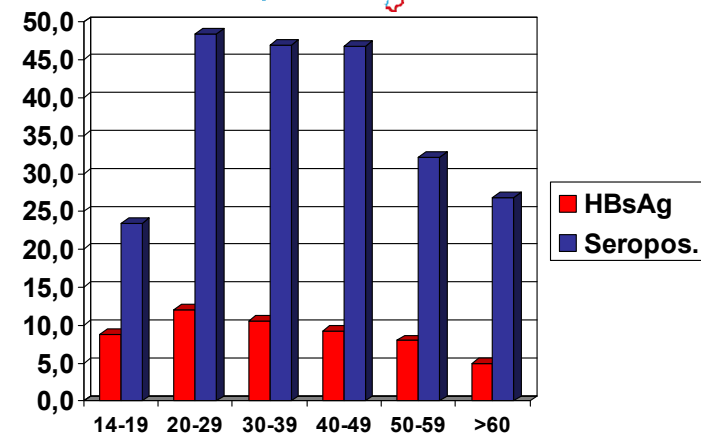
Study population: 384, Mean age: 41 7

HBsAg: 9.1%

Seropositivity: 36.7%

(vaccination: 7.3%)

Kaçar F, et al. Infeksiyon Dergisi, 2003



4 provinces: Diyarbakır, Urfa, Mardin, Batman

Study population: 2 888 (96.3% of the target)

30-cluster sampling method

HBsAg: 7%

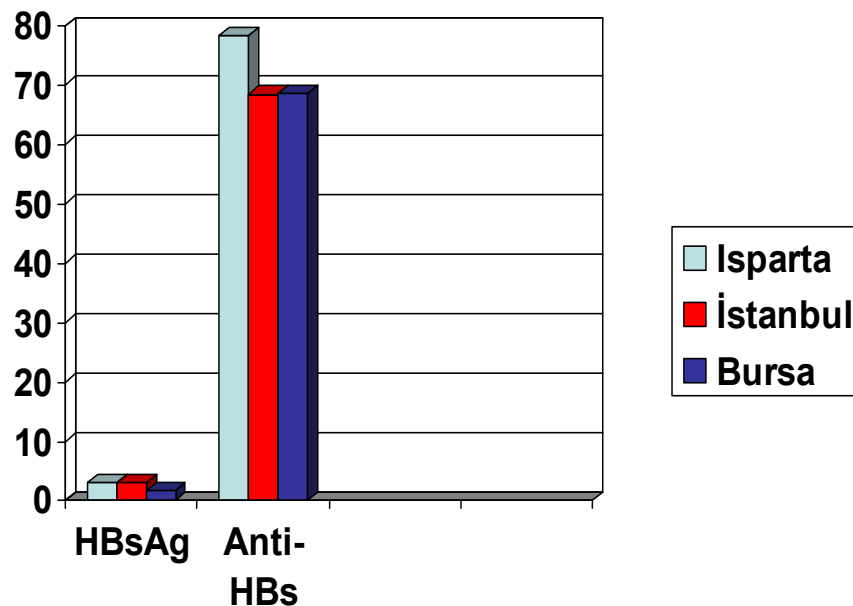
Seropositivity: 47.4% (exposure to HBV)

Risk factors: Living in rural area, male sex, higher age, family history of jaundice

Dursun M, et al. Jpn J Infect Dis, 2005

Health care workers

- Population: 1158
 - HBsAg: 2.9% (vs 4.7% <2000) (p=0.005)
 - AntiHBs: 71.8%
 - Vaccinated: 56.5%
 - Seronegative: 25.2%



Demir İ, et al. İnfeksiyon Dergisi, 2006

Ozsoy MF, et al. Journal of Viral Hepatitis, 2003

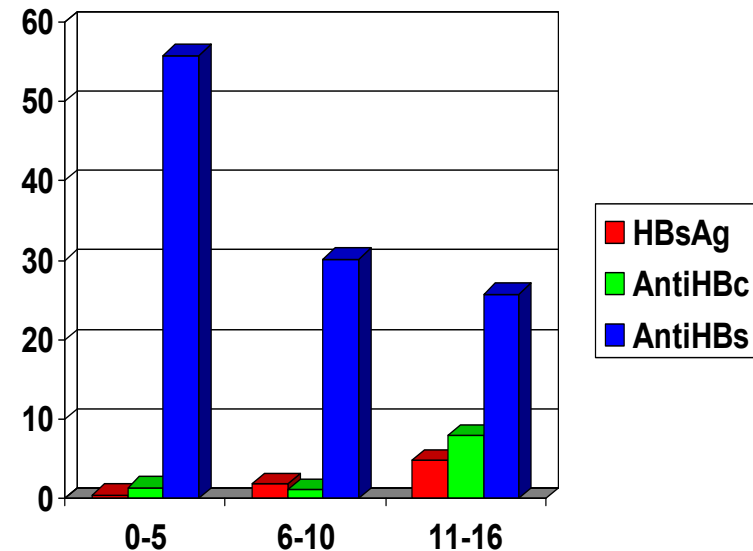
Yılmazlar A, et al. Türk Anest Rean Der Dergisi, 2005

Pre-op screening

- Population: 12 756
 - HBsAg (+) 3.6% (2.3 - 4.5)

Children scheduled for elective surgery

- Population: 429
- Age: 6.02 ± 4.14 (0-16)
 - HBsAg: 1.6%
 - AntiHBs: 39.6%
 - Seronegative: 54%



Öner M, et al. Genel Tıp Derg, 2007
Utkan A, et al. Acta Orthop Traumatol Turc, 2006
Çöl C, et al. Klinik Bilimler, 2004
Demirel F, et al. Çocuk Dergisi, 2003

Etiology of acute hepatitis

Reference	Year	n	HAV % age	HBV % age
Kandemir, 2007	1990-2004	561	48.2 17	41.5 28
Yamazhan, 2001	1993-1997	246	43 15-20	45.9 21-30
Çolpan, 2003	2001-2003	73	54.8 20.4±6.1	39.8 30.9±12.5
Ertuğrul, 2006	2004-2005	46	87 12.35	13 37.33

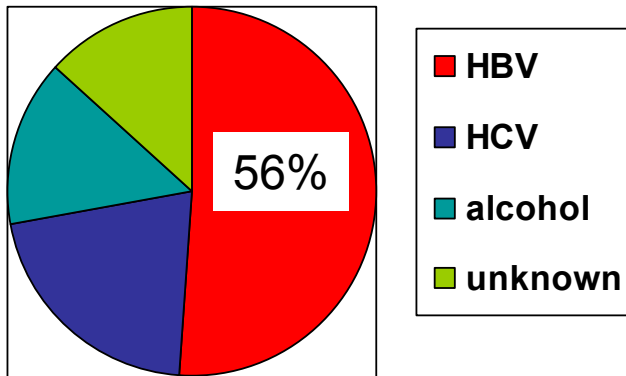
- HAV is the major cause before the age of 20
- HBV is seen mainly in the adult population (20 to 40 years of age)

Hepatocellular Carcinoma

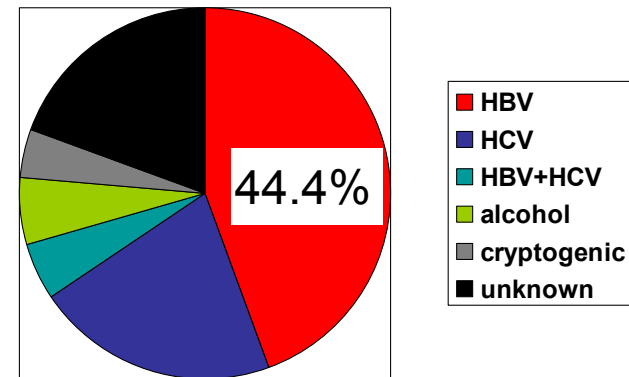
HCC incidence: 0.83/100 000
(similar between 2000 and 2003) - MoH,2003

1994 – 1997 → 7 hospitals
n: 207
Uzunlimoğlu, 2001

1994 – 2007 → 5 hospitals
n: 221
Alacacioğlu, 2008



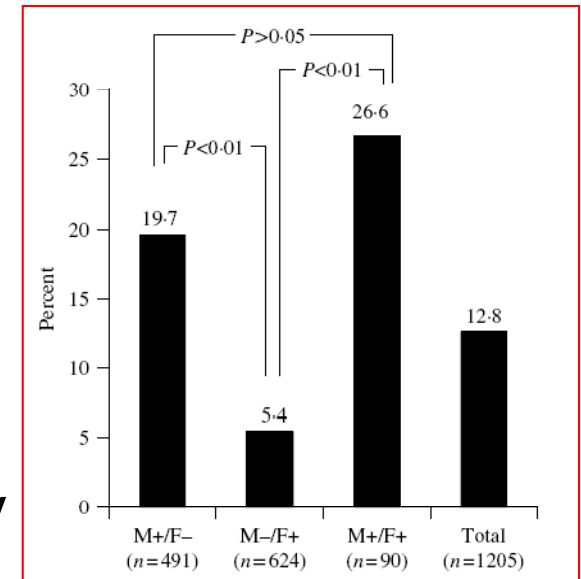
18% of the HBV positives
were infected with HDV



2% of the HBV positives
were infected with HDV

Horizontal transmission is the major route

- HBsAg prevalence increases with age among children
 - Peaks between 5-15 years of age
- Intra-familial transmission is common (parents to child, sibling to sibling)
 - 302 children with CHB
 - Risk for intra-familial transmission - 71.9%
 - Risk for parenteral transmission – 23%
 - Risk is higher when both the parents are HBsAg(+)
 - Risk increases proportionately with the number of children in the family



Değertekin H, Public Health, 2008

Ucmak H, et al. Epidemiol Infect, 2007


Doğancı T, et al. World J Gastroenterol, 2005

Erol S, et al. Eur J Gastroenterol Hepatol, 2003

HDV-1

Anti-HDV positivity in asymptomatic HBsAg carriers

Year	n	Anti-HDV %	Reference
1980-1990	659	4.1	Değertekin, 2006 (General Turkish population)
1991-2000	5162	5.4	
2000-2005	792	2.9	
2002-2005	889	6	Celen, 2006 (Diyarbakır)

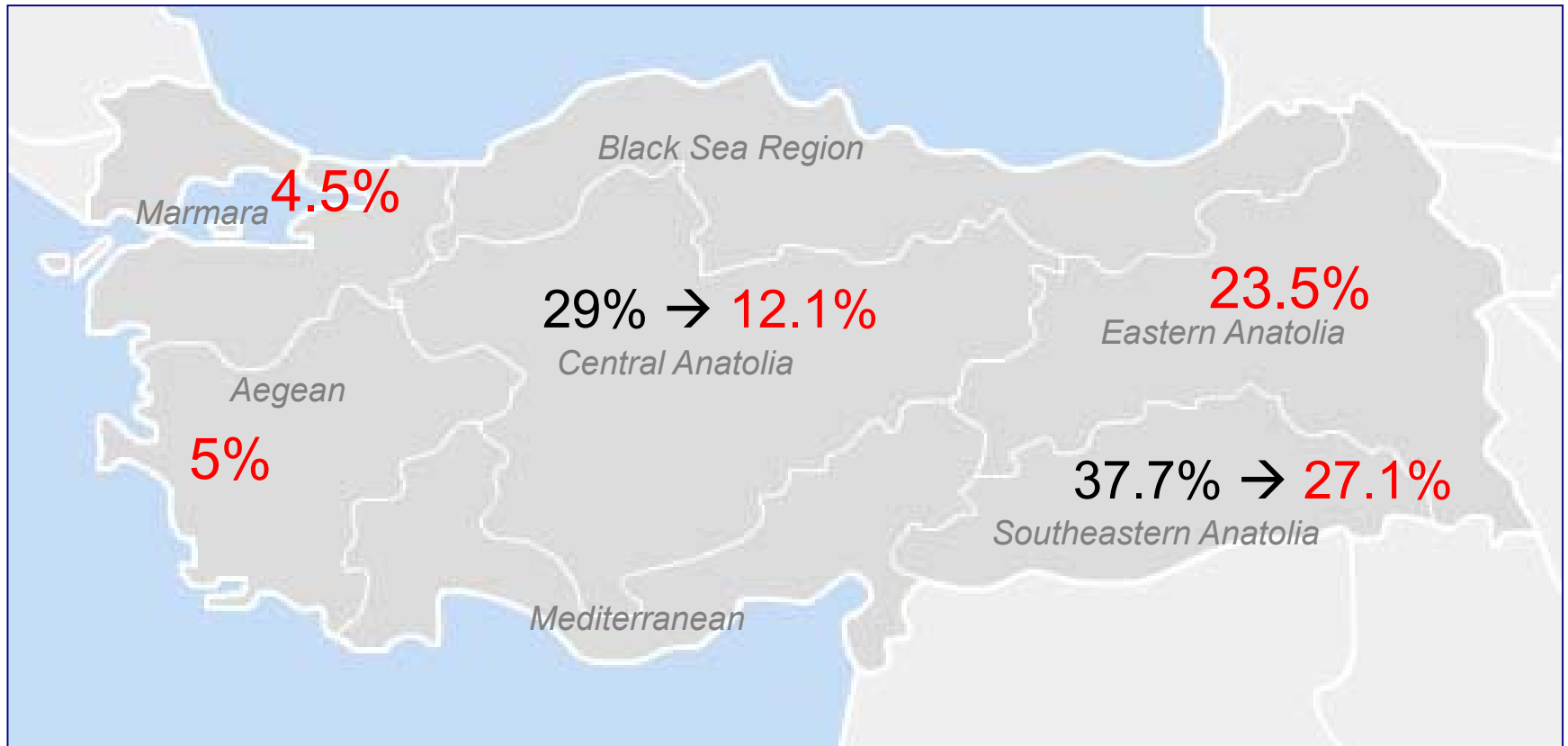


Değertekin H, et al. Turk J Gastroenterol, 2006

Celen MK, et al. Saudi Med J, 2006

HDV-2

AntiHDV positivity in chronic hep B
(n: 5231)



Before 1995 → After 1995

Değertekin H, et al. *Liver Int*, 2008

Summary - HBV

Turkey is a country of intermediate endemicity for HBV

- Prevalence of HBV shows a regional difference (higher in southeastern and eastern parts of Turkey)
- HBsAg - peaks around 10-20 years of age
- Decrease in HBsAg prevalence (field studies = 2.5 – 9.1%)
 - Decrease among children
 - Possibly by preventing perinatal and horizontal transmission by the vaccination program
 - Decrease among blood donors (5.23% → 1.8%)
 - Quality of the pre-donation screening
 - Increase of civilian vs military donors
 - Decrease among HCW (4.7% → 2.9%)
 - No significant decrease among pregnant women

6.8% → 5.85% → 3.8% (n:28 000) (2.2% inc.BD, n:270 000)
1980-90 1990-2000 2000-2009

Summary - 2

- HBV is the leading cause of chronic hepatitis and HCC.
- HDV is still an important problem although the prevalence is decreasing
 - More prevalent in the east and southeast
 - Lower socioeconomic and educational status
- Well-designed studies needed for more reliable data